NSA-2401

Support Note

Revision 1.00

Dec, 2008

INDEX

Key applications

This support note will be supplemental document for some of new features in NSA-2401. The more details of meaning of options can be found in online help and user guide.

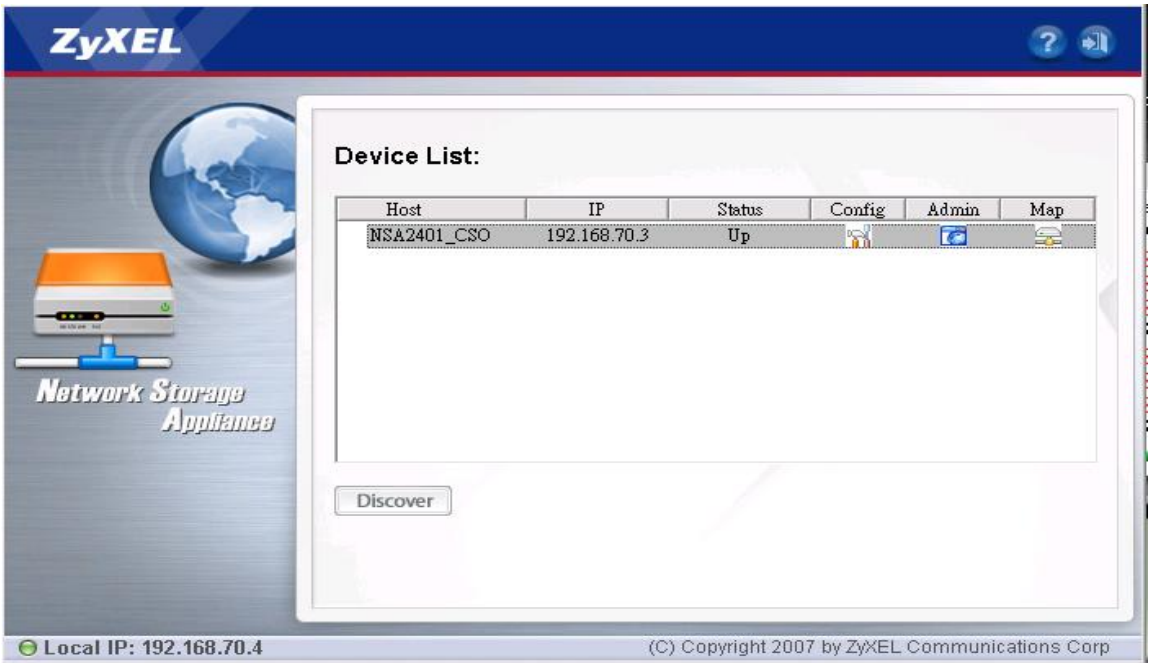
1. How to search my NSA-2401

In the beginning, the default IP address of LAN1 is 192.168.1.3, and LAN2 is 192.168.100.3. Also, username is “admin” and default password is “1234”. However, user can change the default username and password later. Additionally, user may forget their IP of NSA-2401 or they have many NSA-2401 in the network. How to search the NSA-2401 in customer’s network?

1.1 Discovery tool

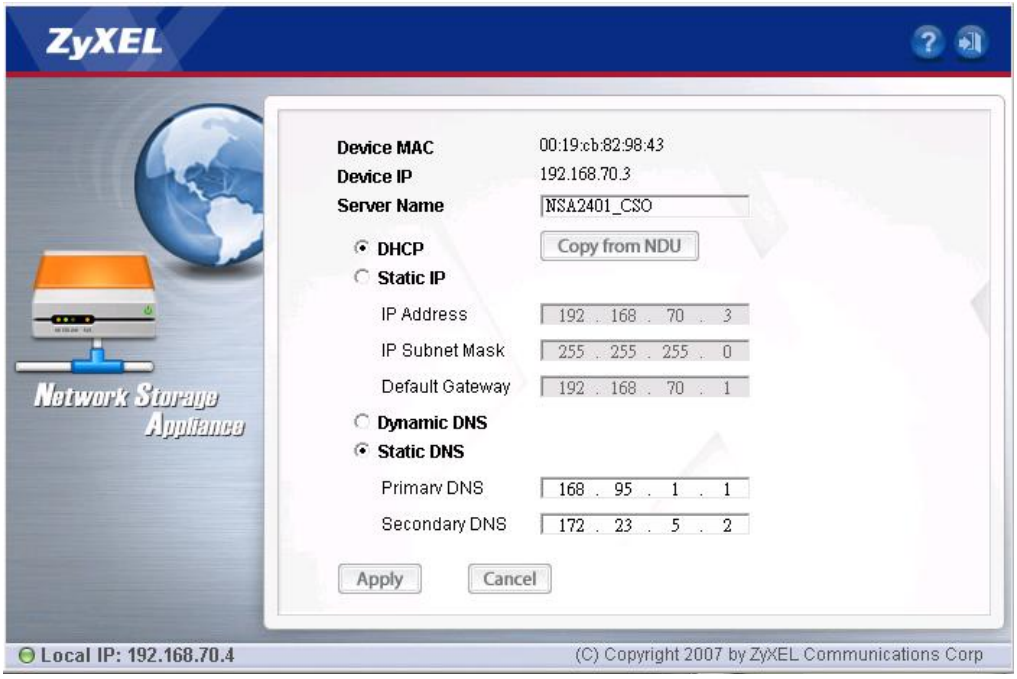
” ZyXEL NSA Discovery Utility” provides an easy to search all the NSA-2400 or NSA-2401 even other NSA series products. After installing the utility, users should find an icon in their desktop. Please click the icon of “NSA ZyXEL Discovery Utility” to run the program.

After clicking the “Discover” icon, users will see the list of all NSA series in the same subnet.



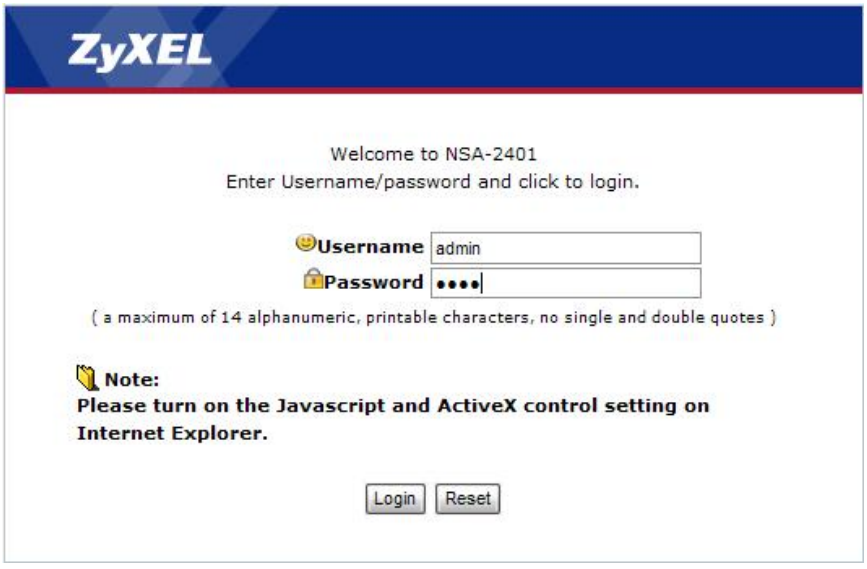
1.2 Configure network

First, users can configure the IP address of specific NSA-2401 by clicking the “Config  ” icon. There are DHCP and static IP options and dynamic and static DNS for network setting of NSA-2401. Hence, users can use this to change the default IP address.



1.3 Login into admin

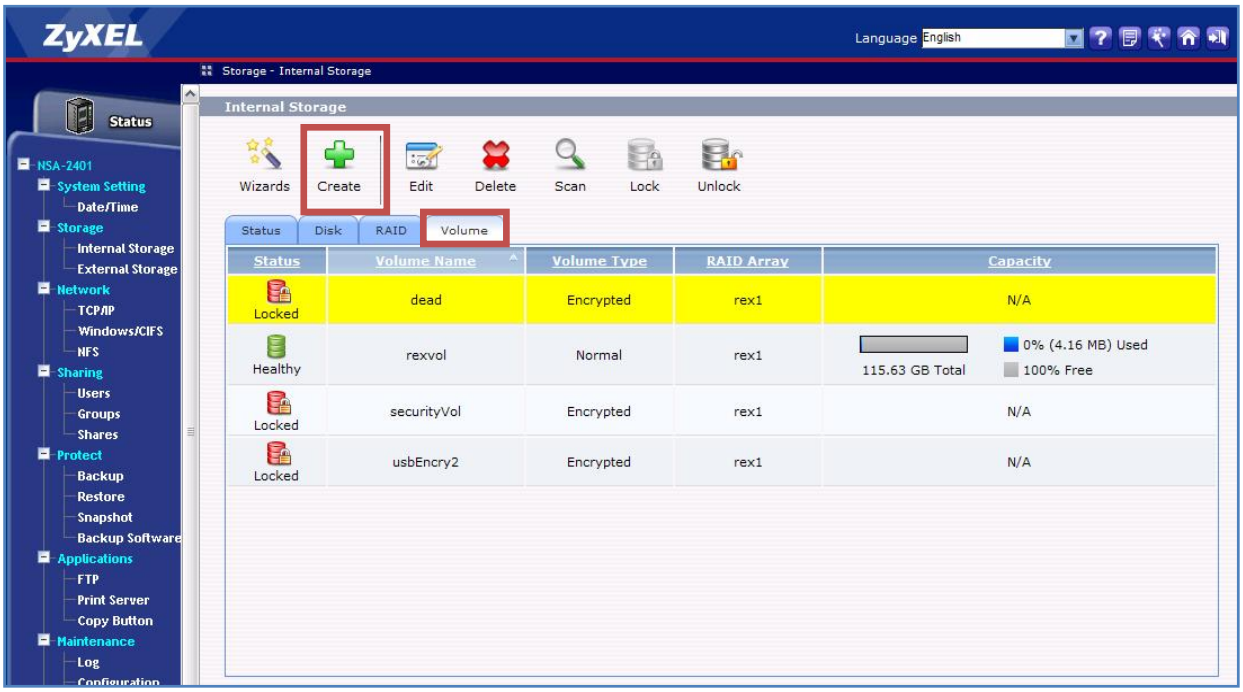
There is another convenient option for users to log into the web-based GUI of NSA-2401. By clicking the “Admin  ” icon and system will open login page of NSA-2401 in web browser. Default username is “admin” and password is “1234”.



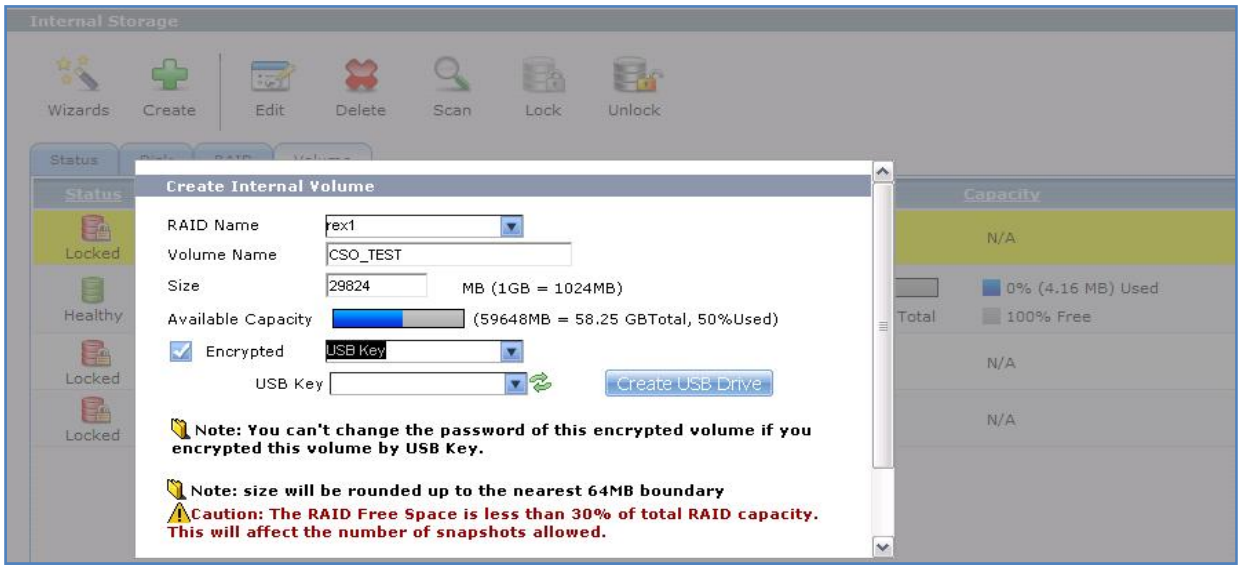
2. Volume Encryption

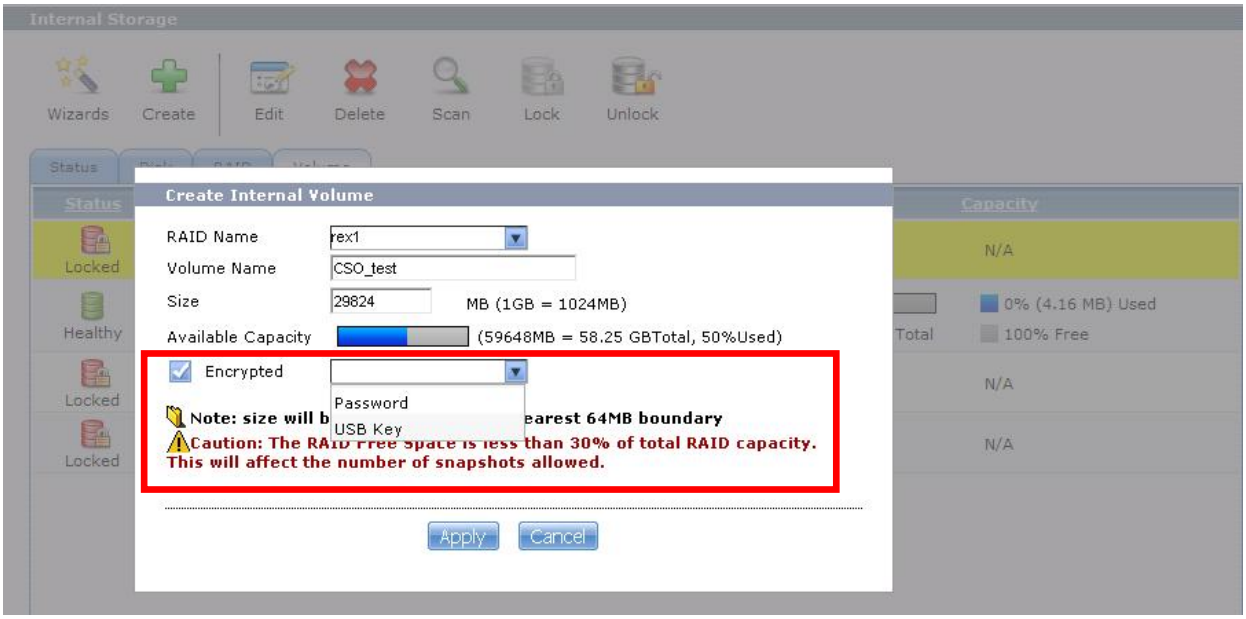
In NSA-2401, users can encrypt individual internal volumes once they create them. There are two ways to protect their data volume. One is set the password for individual volume(s); the other is to create an USB key. **Please pay attention to make multiple copies for their password and\or USB keys.**

First, users can create their internal volume by selecting Storage> Internal Storage> Create.



Afterwards, users need to activate the “Encrypted” option. Select which type of encryption to protect your data volume.





In this example, we select "USB key" as encryption method. Hence, users need to plug into his USB flash drive in NSA-2401 in advance. **Please notice that this USB will be formatted and stored for the encrypted key ONLY. This USB key should be dedicated as the USB key ONLY. Users can not use the USB flash drive to store other files anymore.**

Note:

- **Please make two or more USB keys for your volume.**
- **It is very important to keep your password and USB key(s) in one secure location.**
- **One USB key for ONLY one volume.**

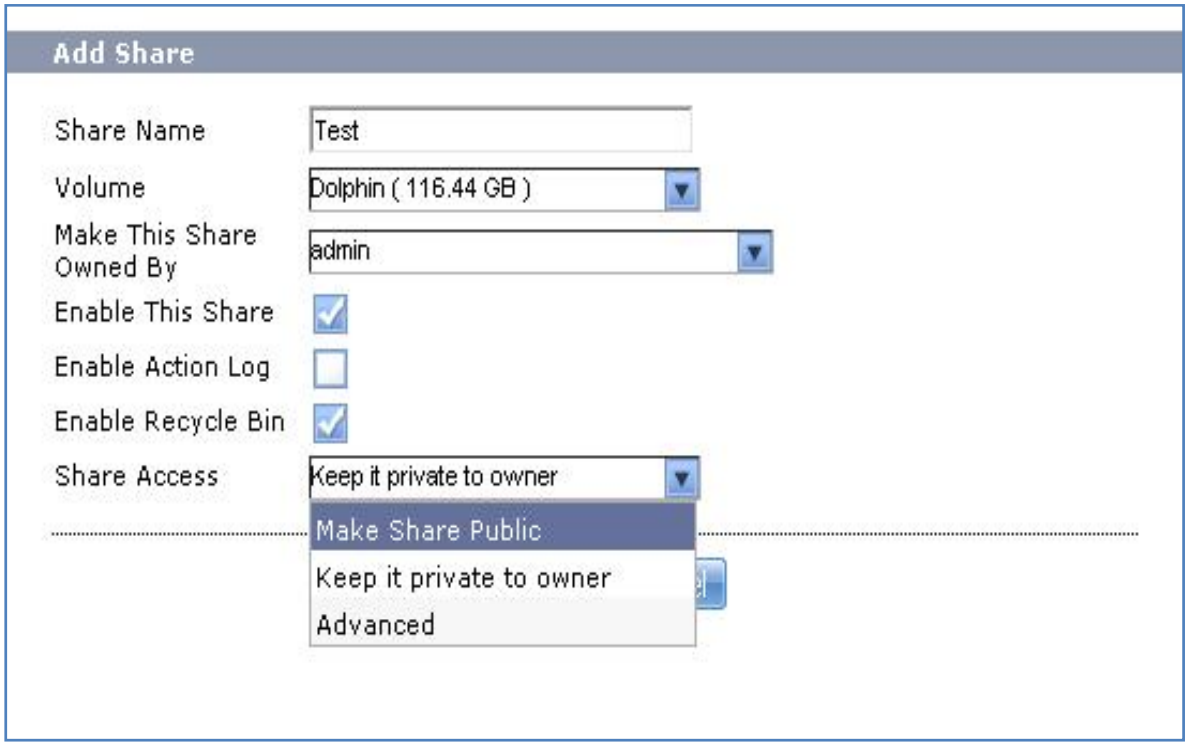
3. Sharing

3.1 ACL feature

In NSA-2401, there is a new feature for system administrator to control users privilege in accessing specific file(s). ACL (Access Control List) is the main function to achieve the file management for every user.

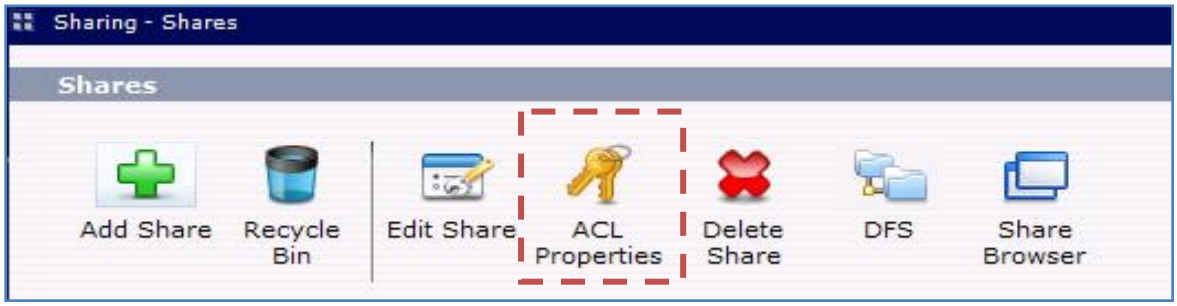
First, users need to create a share folder and make it as public, then system administrator can assign individual files access right.

The following figure shows that one folder named “Test” created for public usage.

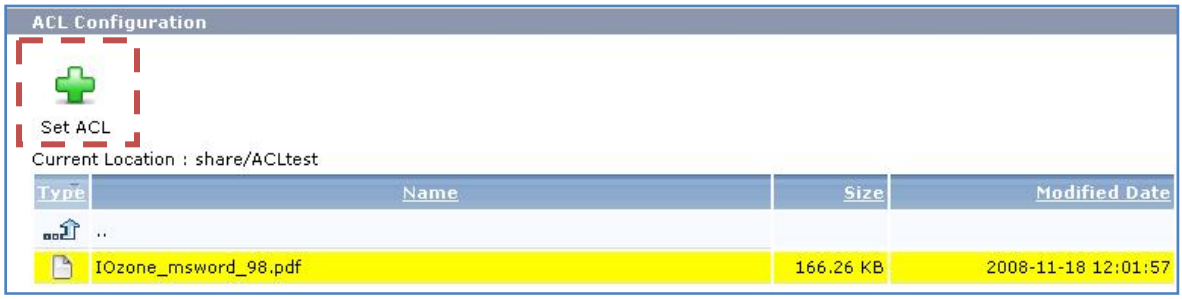


Next, you can see the public share folder list as following.

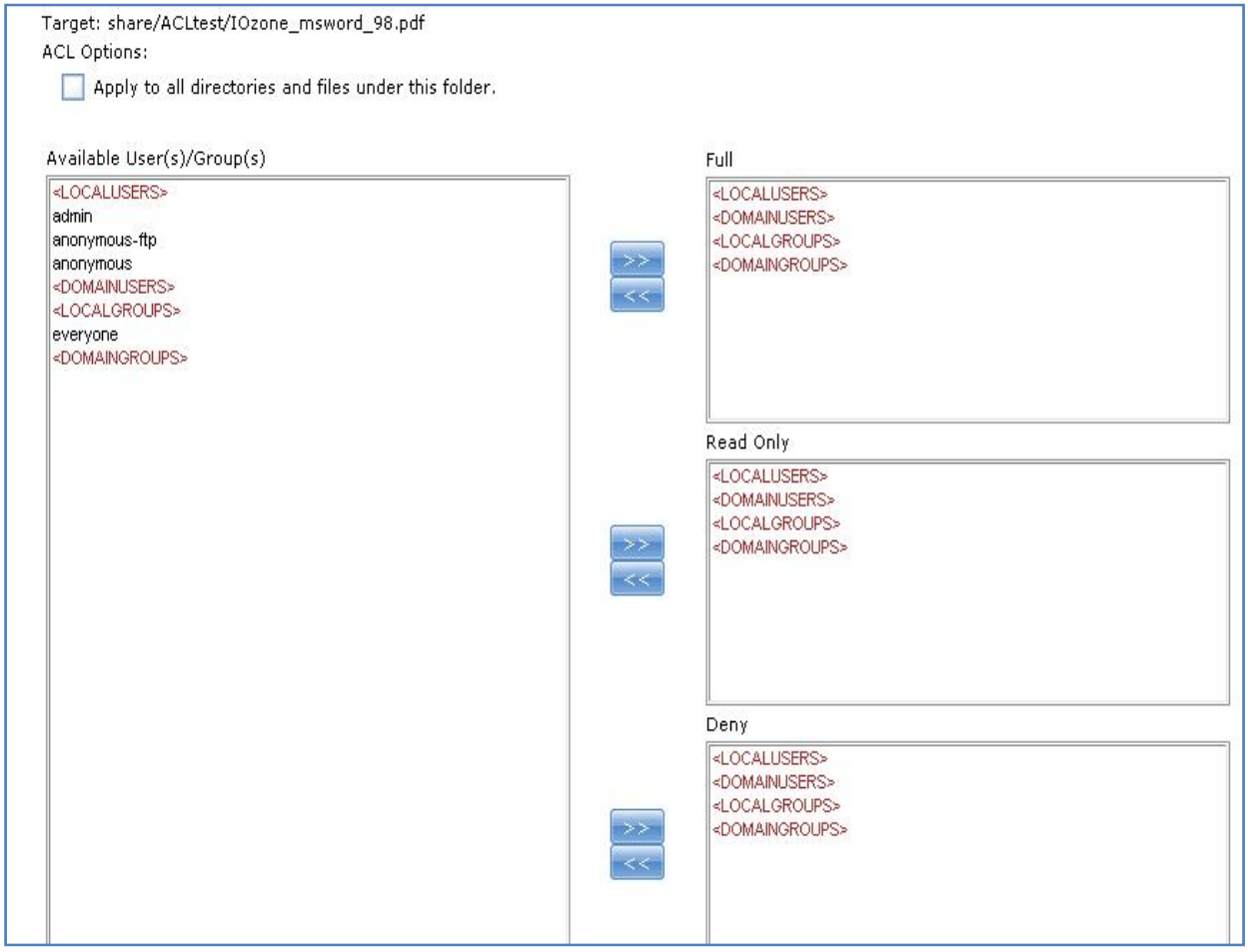
Click Sharing > Shares, select a share, and click ACL Properties screen to open the Access Control List (ACL) screen. Use this screen to display and configure ACL settings. The ACL defines read/write permissions for specific files and/or folders.



Next, administrator chooses a file to set ACL for the assigned file.



In the ACL setting, administrator can control the file access right by assigning full, ready only and deny right. However, file creator can have always “admin” right even the original owner is assigned to as member of deny group. **Please remember that file owner always has the full access file privilege.**



After the above ACL setting, one ACL rule for the given file is implemented.

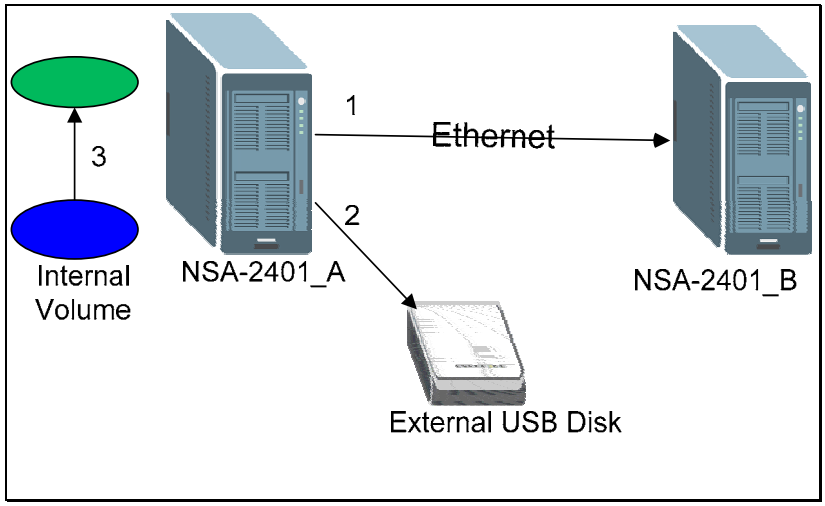
As for the access right at EVERYONE & ANONYMOUS share Access, with an EVERYONE access right, you still need to log in. Every local user with an account on the NSA can access this share using their username and password. However, users with accounts on a domain server cannot access shares with EVERYONE access rights. EVERYONE has every local user as a member. It does NOT include domain users.

With ANONYMOUS FTP, you must enter either 'anonymous' or 'ftp' as the user name. Any other name is considered a user name, so must be valid and have a corresponding correct password.

	Shared folders	
File access method & right	Everyone	Specific accounts
Access right	Everyone accounts	Personal account
FTP	Anonymous	Private folders

4. Protection

There are two backup functions in NSA-2401. One is built in NSA-2401 and the other is executed by Genie Backup software (GBM). Hence, in our design, users can create data backups to another volume, an external USB disk drive, or a computer or another NSA over the network.



The above figure shows that there are three ways to backup data in users' NSA by using the backup function in NSA.

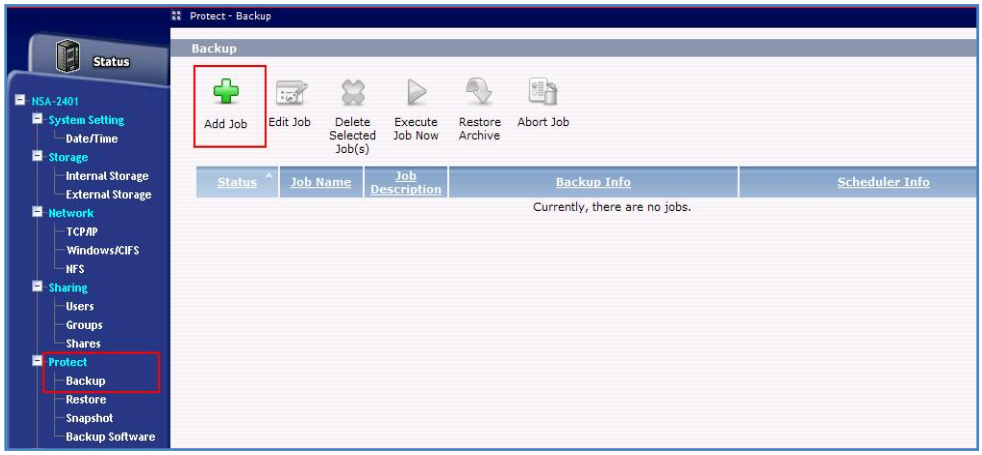
I. NSA to remote NSA

II. NSA to external USB hard drive disk

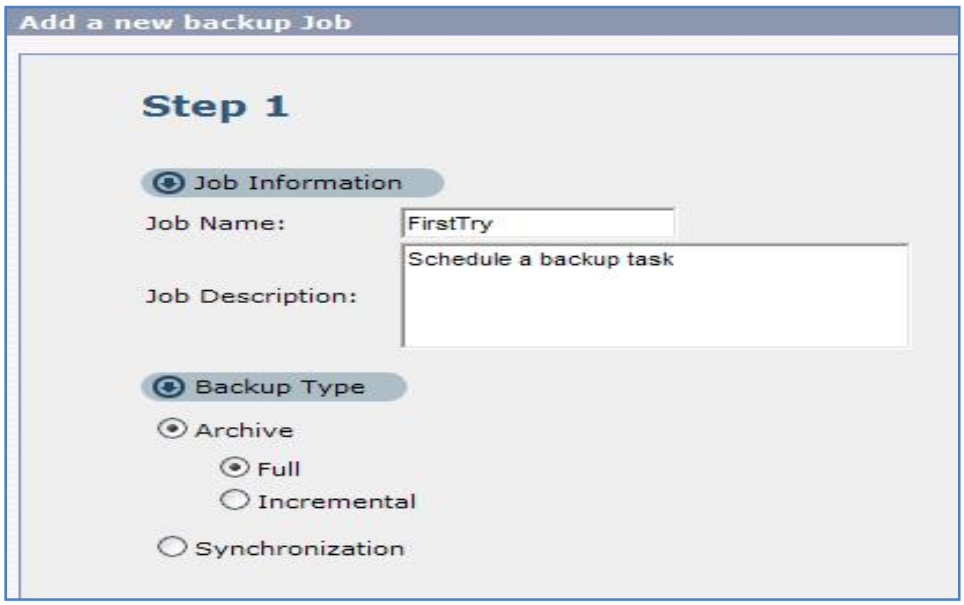
III. Backup as another volume in the same NSA

4.1 Backup

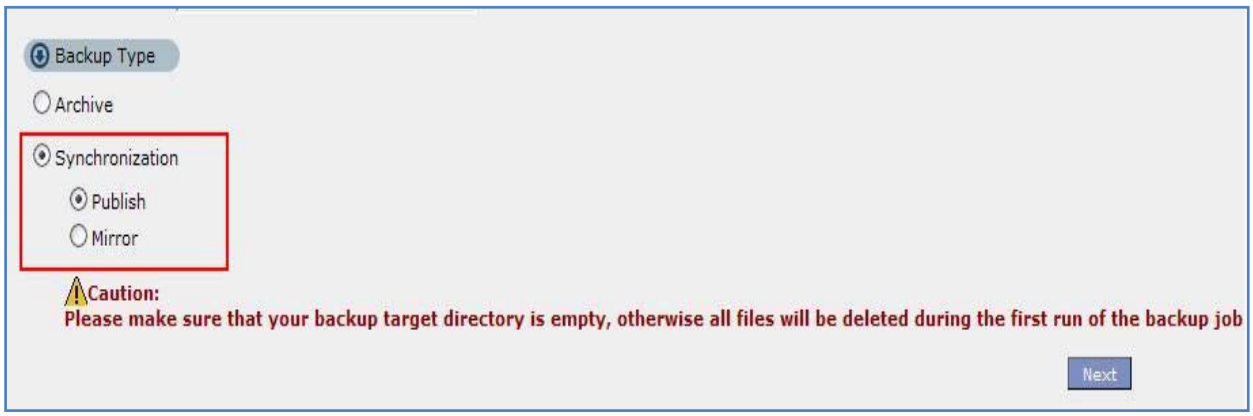
In this example, users can schedule backup task to make a copy to remote NSA or PC. By using the backup function in protection menu, users first add the schedule of backup task.



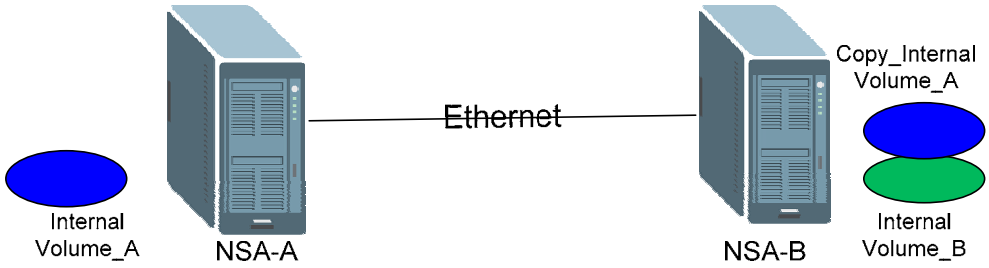
After clicking the add icon, system will guide users to configure this task step-by-step. IN first step, users need to set job name and its description. Additionally, users can set the type of backup to be full copy of the data or incremental copy of users' data.



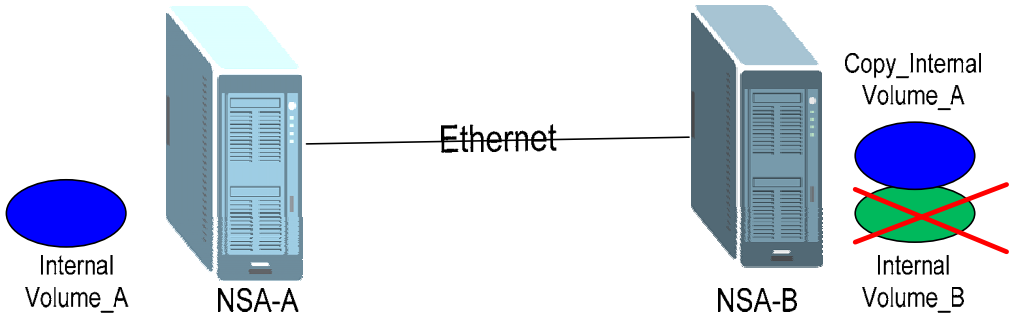
Users can make copy to another NSA-2401. Please notice that the actions of synchronization in backup type, there are two types of options: Publish and Mirror.



In publish method of synchronization, the data in NSA-A will be copied to NSA-B and the original files in NSA-B will be kept. In other words, NSA-B will keep the data of NSA-A and also keep NSA-B's original data.



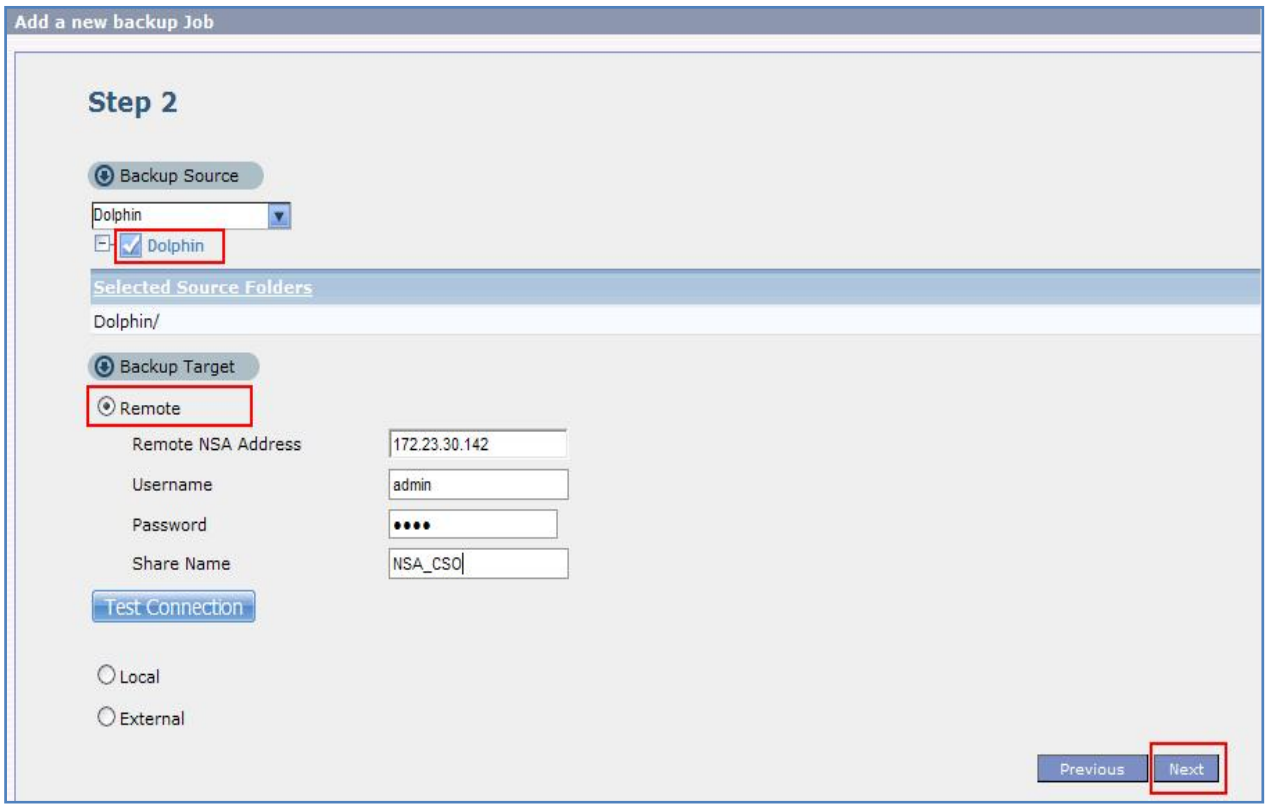
In mirror method of synchronization, the data in NSA-A will be copied to NSA-B and the original files in NSA-B will be deleted since the mirror mechanism. In other words, the original data of NSA-B will be erased and keep the data be identical as NSA-A.



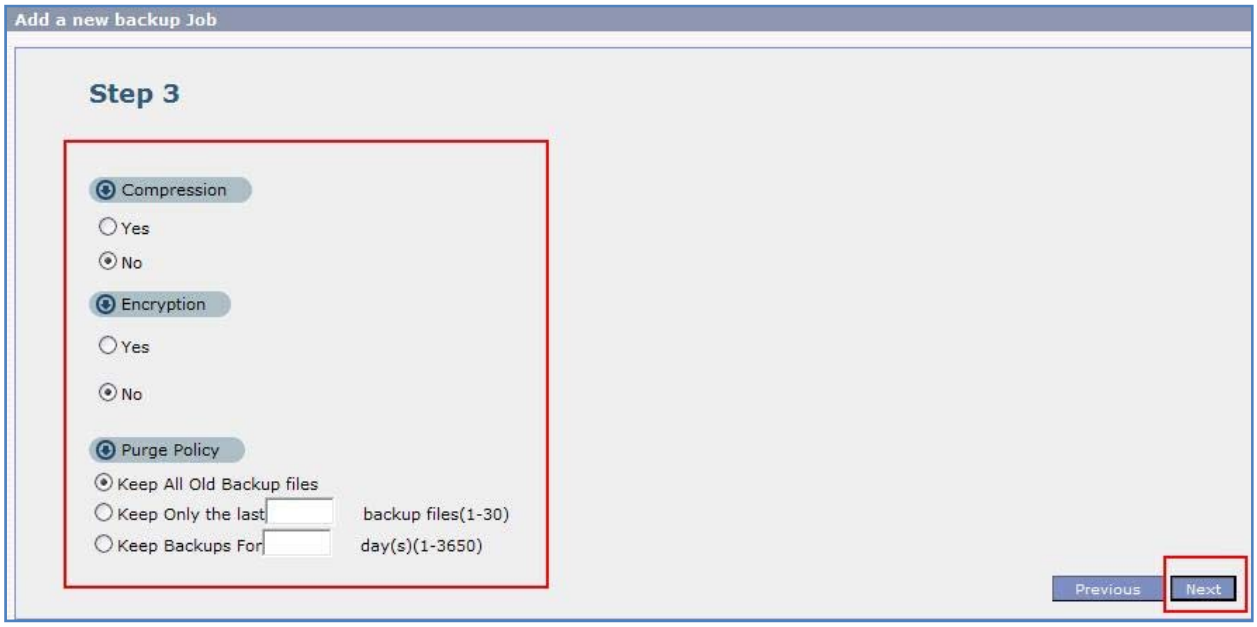
Please make sure which kind of synchronization you like before run the backup task.

The above scenarios can help system administrator to do backup in different locations to prevent the single location failure. Additionally, administrator needs to consider the time cost, location security and double equipment investment when they deploy remote replication and backup solution.

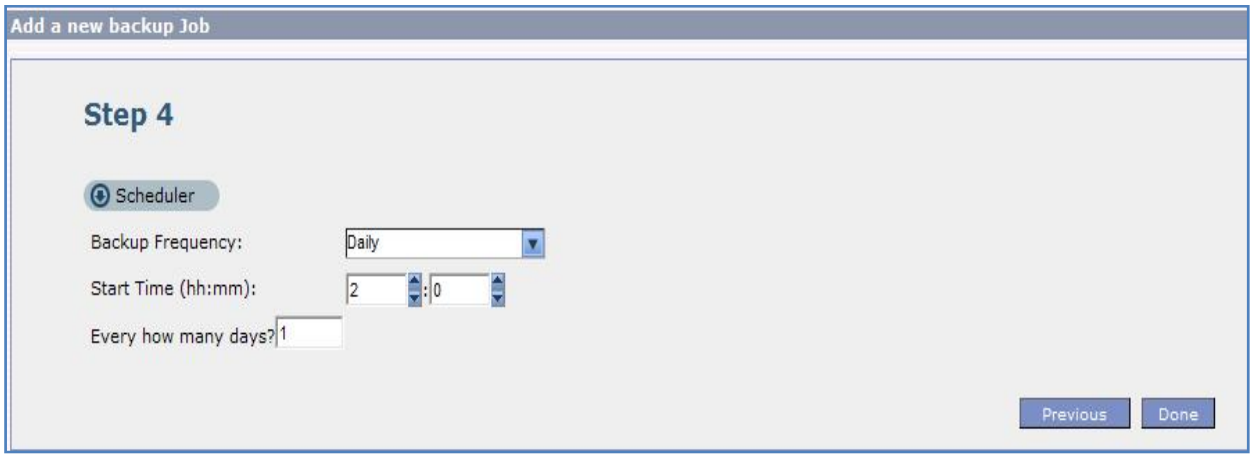
Next, users should choose which volume or folder will be made backup by this task.



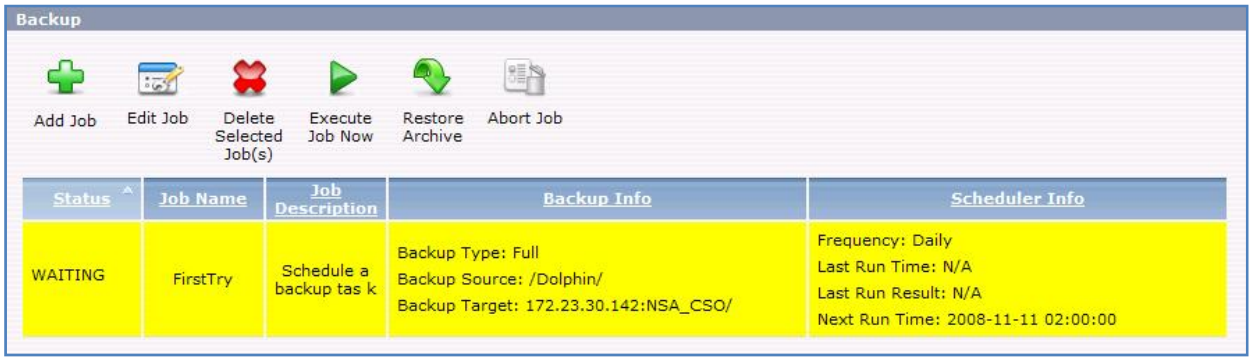
In step 3, there are options for compression type, encryption type and purge policy for users to manage. In purge policy, users can decide how many backup in history would be kept in system.



Furthermore, users can decide the time to start and frequency of backup. The backup can be scheduled as hourly, daily, weekly or monthly.



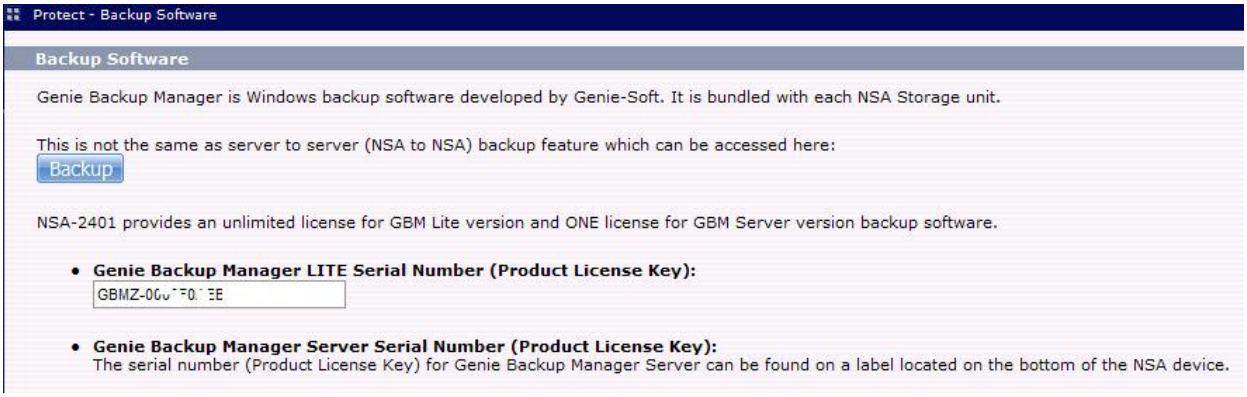
After all above steps, the new backup schedule is implemented. Users can check the details of backup task listed in the menu. Additionally, user can still modify the current backup task by choosing the options above the backup task.



4.2 Backup Application

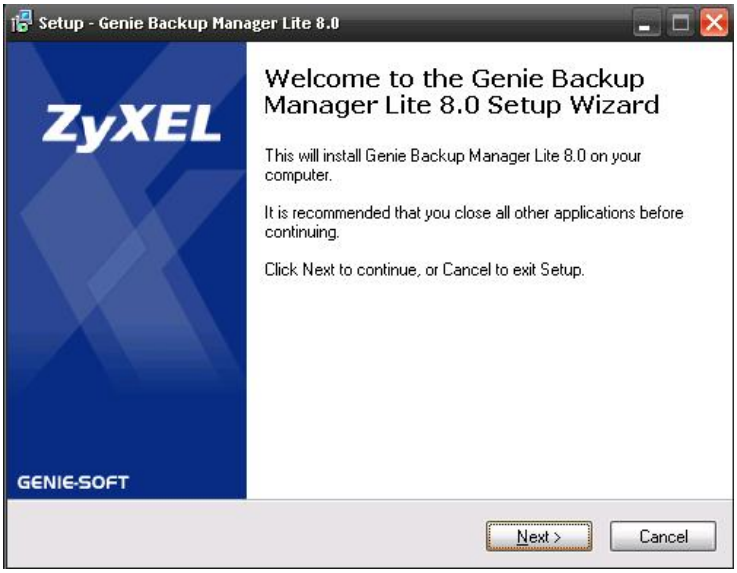
NSA-2401 also provides another windows backup application, Genie Backup Manager (GBM). It is bundled with each NSA Storage unit. Users can have unlimited client license but have only one server license. This application is used for backup user's data in their PC to NSA-2401. In practice, users can still use GBM to backup specific data of NSA to user's PC but not all volume.

Regarding to the GBM software, users can find the setting in protection >backup software. Every purchase bundles with GBM Lite and GBM Sever. Users can find the serial label on the bottom of machine and then type the server serial number in the menu.



4.2.1 GBM Lite software

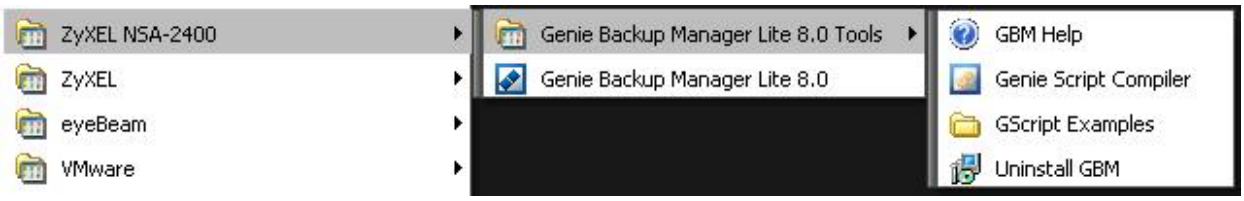
Users can find the GBM Lite software in the CD when they purchase the ZyXEL NSA-2401.



After a few minutes installation, user can find the serial number on the bottom of machine and then finish the installation of GBM Lite software.

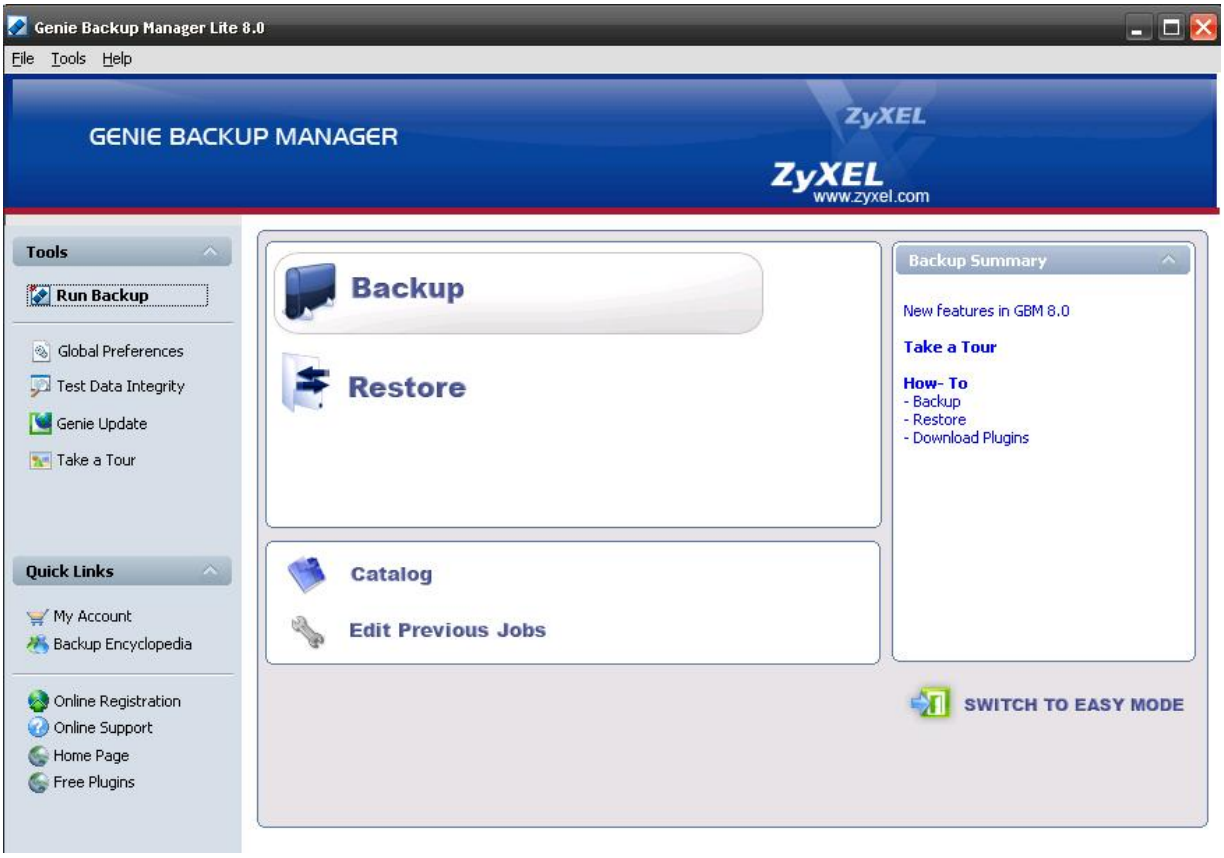
4.2.1.1 Create Backup Task

After installation, users can find the program group in their PC and just click the icon to run the GBM software.

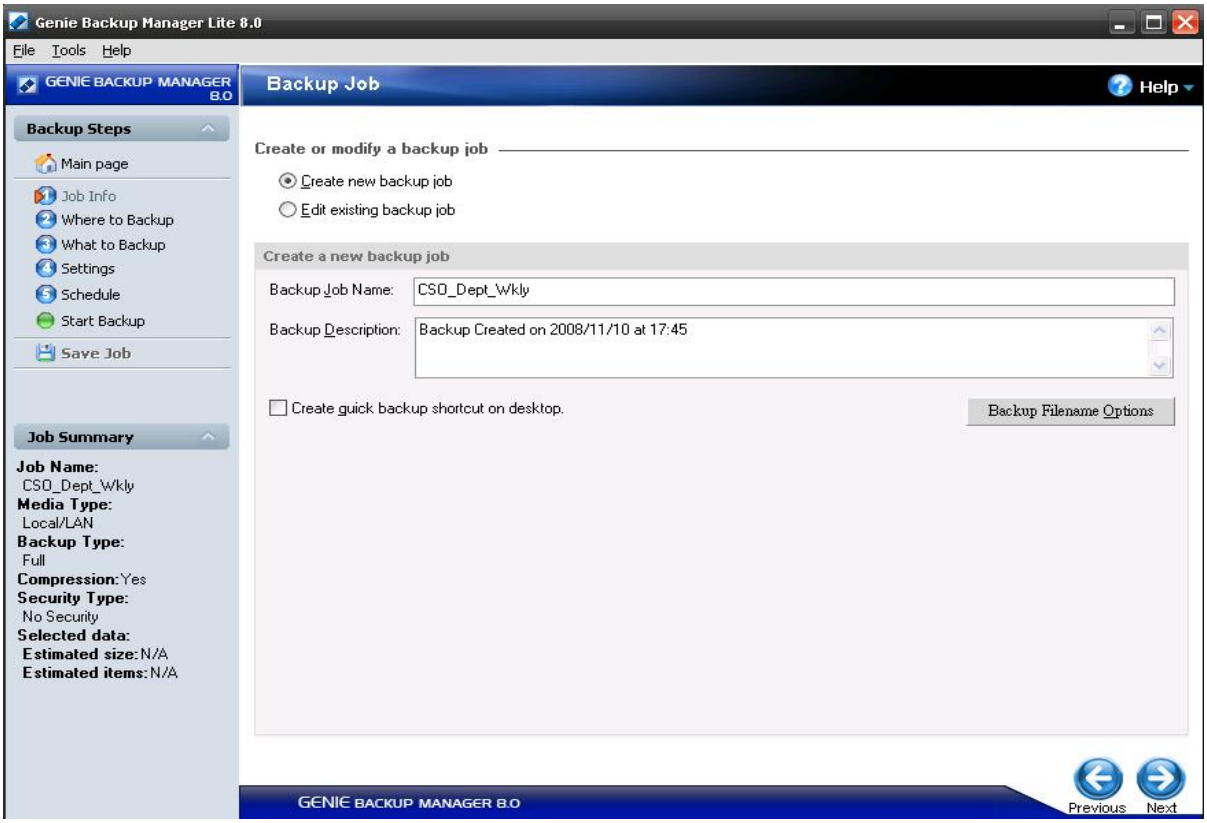


It is very easy to configure your backup task by using GBM. There will be step-by-step wizard to guide your own backup task.

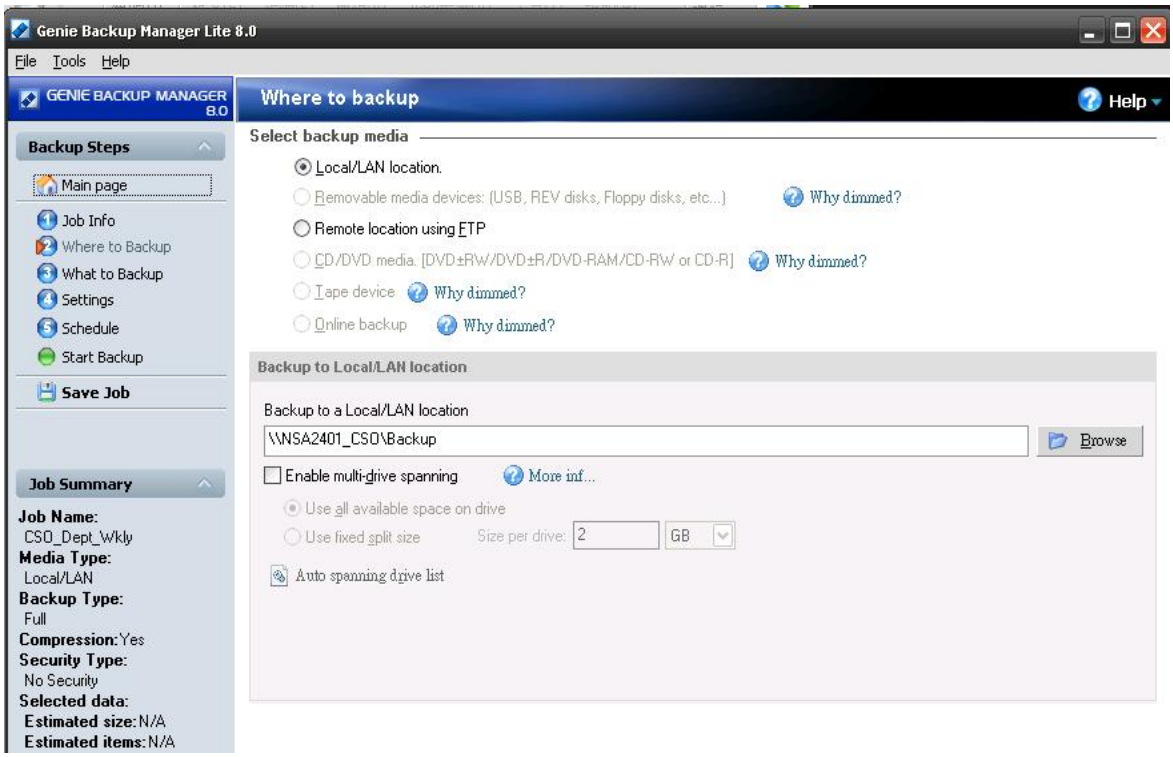
By selecting the backup function to start the configuration.



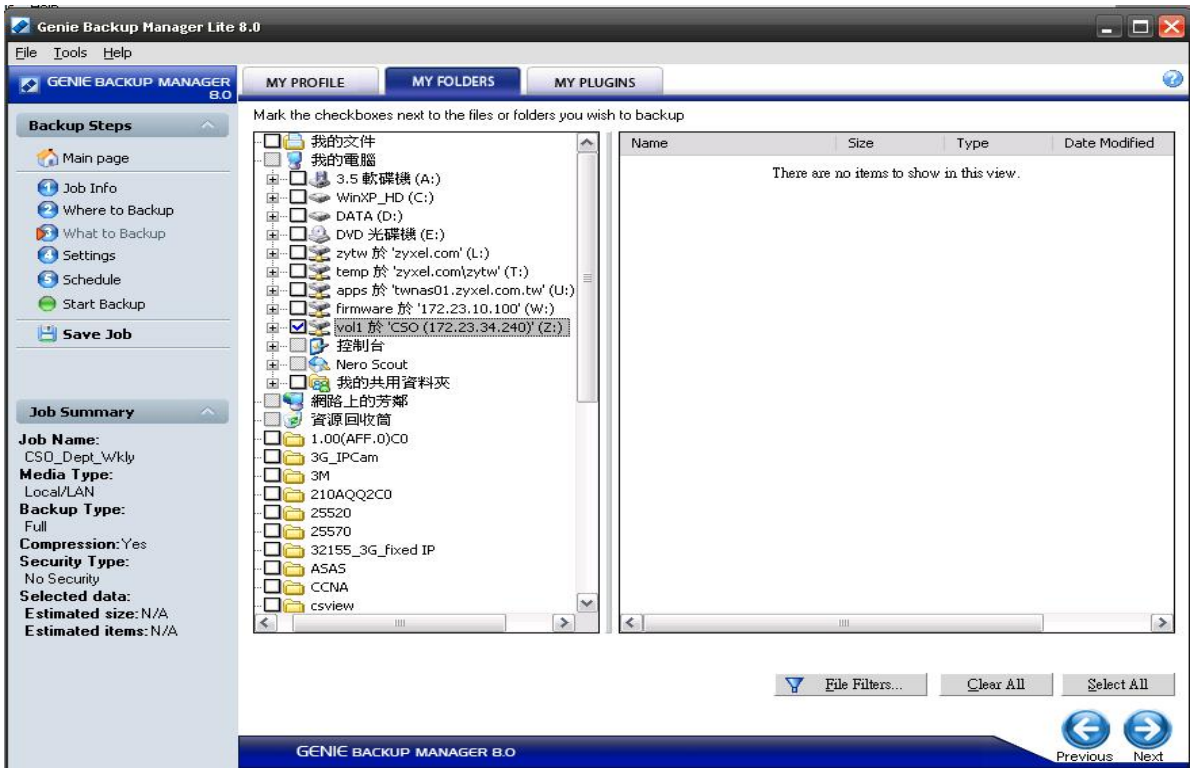
Next, users can create a new backup task including name and description.



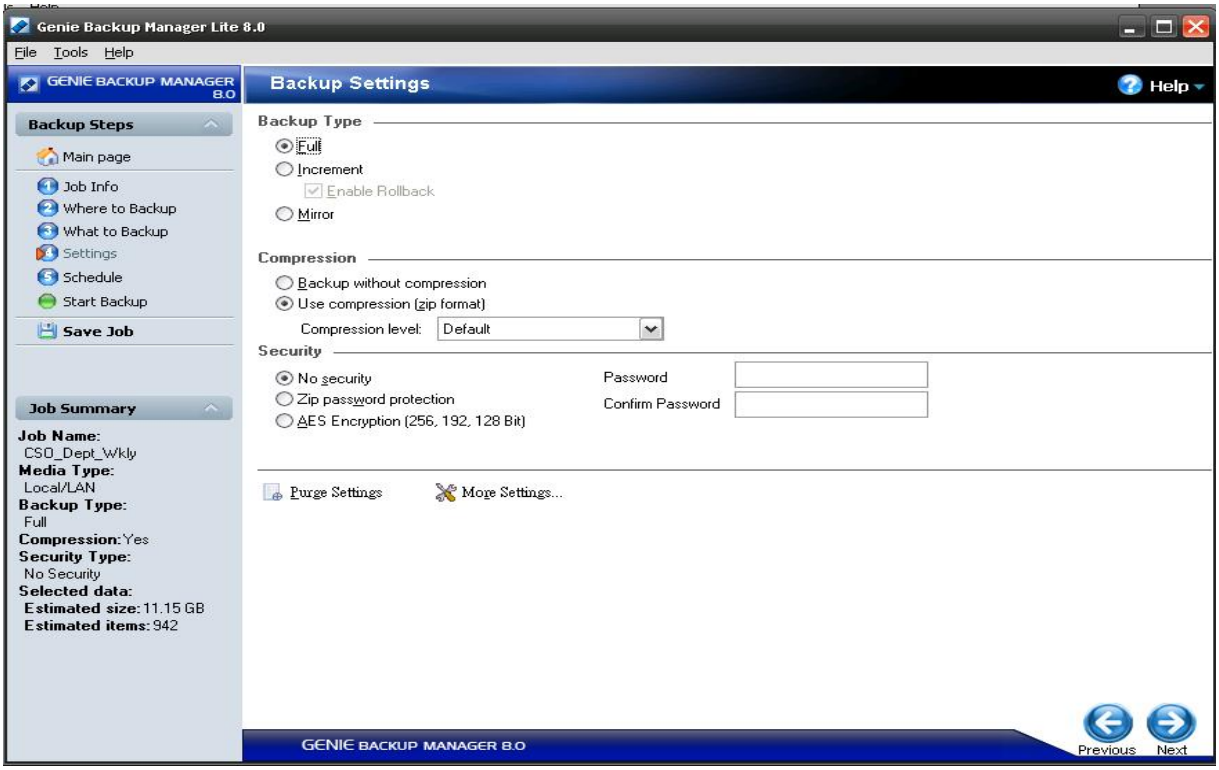
Then, users can choose the method of backup by local area network or by FTP method. In this example, we choose to backup from PC to NSA-2401 through LAN and store the backup file in the folder of CSO.



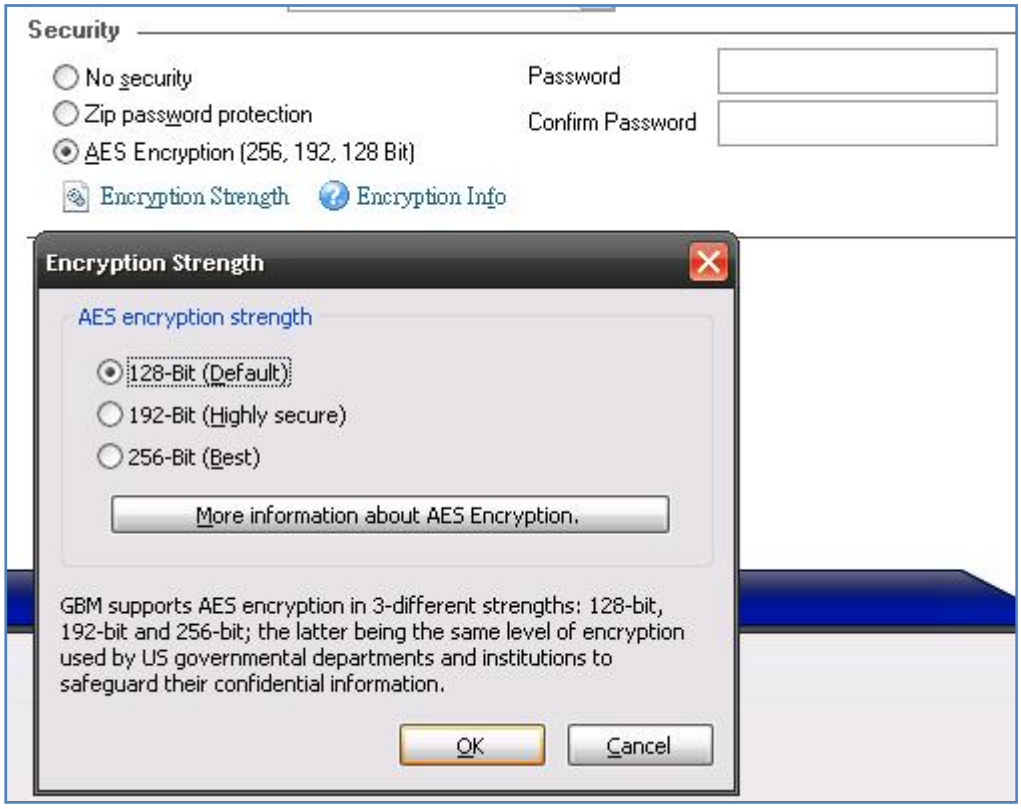
Next, users should choose which folder(s) will be made a copy in this backup task.



Next, there are options for different type of backup, compression and security for users. Please make sure which one is better for your application. Furthermore, full backup means that copy all the data users assign no matter data is old or new added. But, in incremental method, backup will only made the new added files.

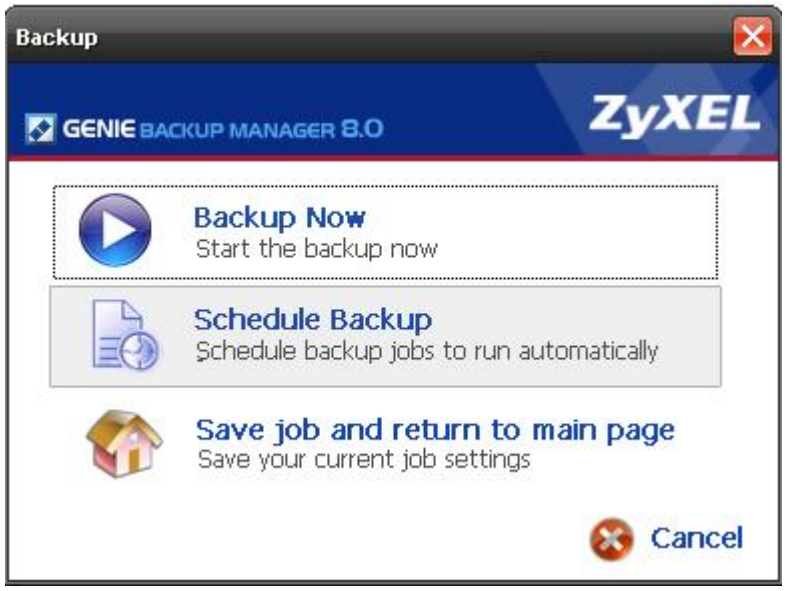


As for the security function, we suggest that administrator apply the encryption for your backup file, especially in the remote backup scenario. There are three types of AES encryption in 128-bit, 192-bit and 256-bit. These numbers refer to the size of the encryption keys that are used to encrypt the data; the higher the number the stronger the encryption, at the expense of being slightly slower. All three methods can provide significantly greater security than the password protection method. The strength of encryption does not depend only on the length of the encryption key used but also on the password supplied by the user.



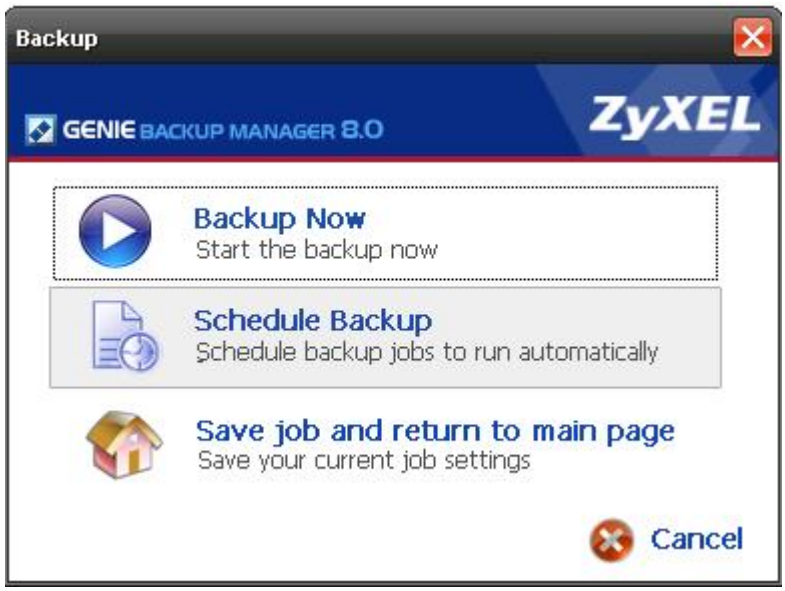
With encryption method, it would be much secured for those backup file to protect your data file. **Please always remember your password and make it a copy in a secured location.**

After the above procedures, one scheduled task is implemented.

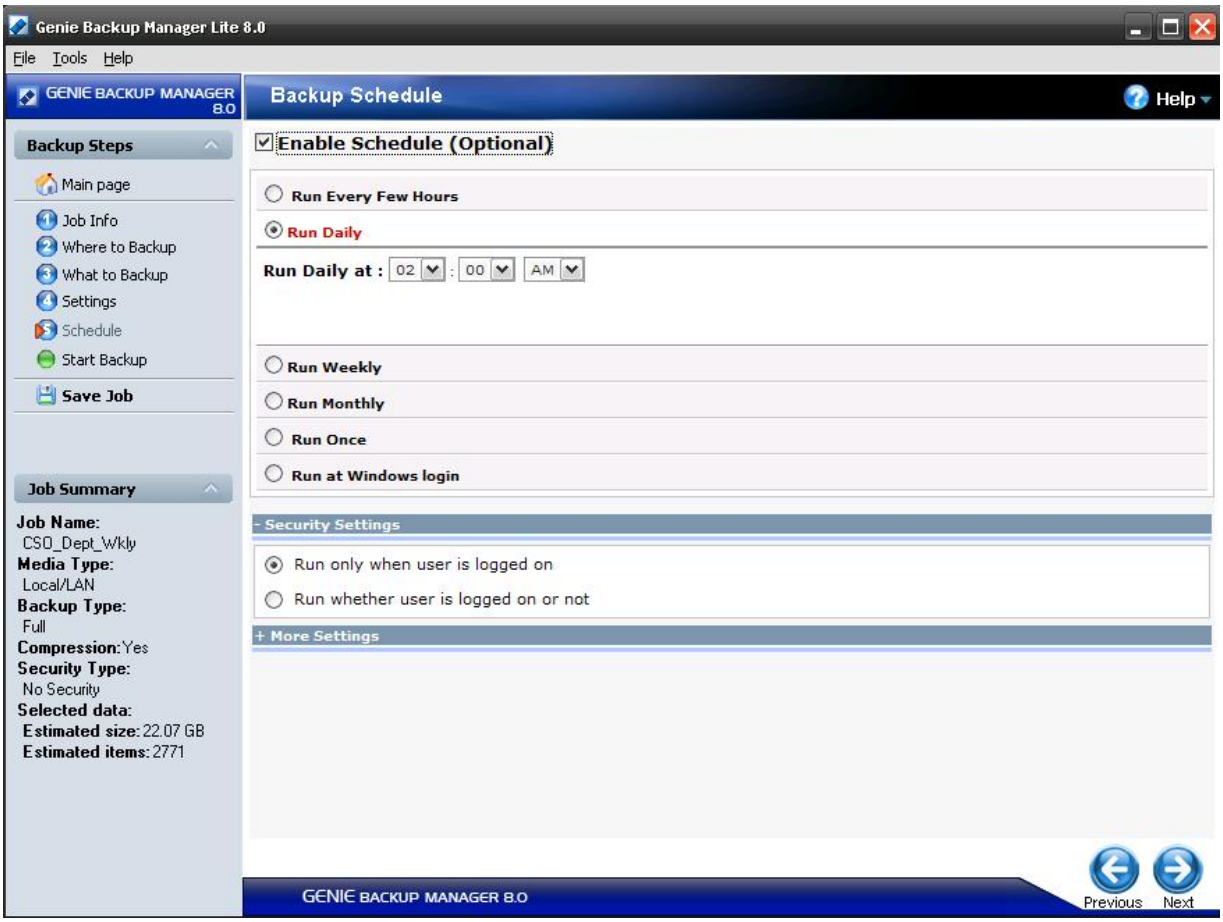


4.2.1.2 Schedule Backup Task

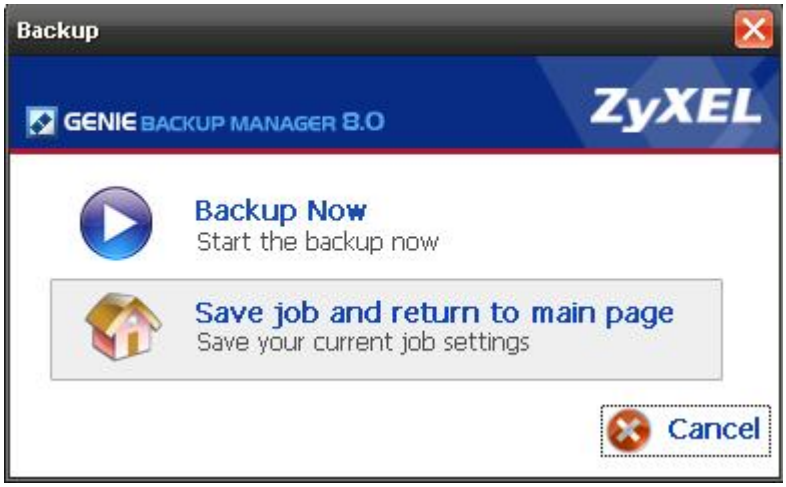
Users can decide the backup time and frequency when they set a task.



In the following figure, users can set backup task as weekly, monthly or other situation based on customer need.

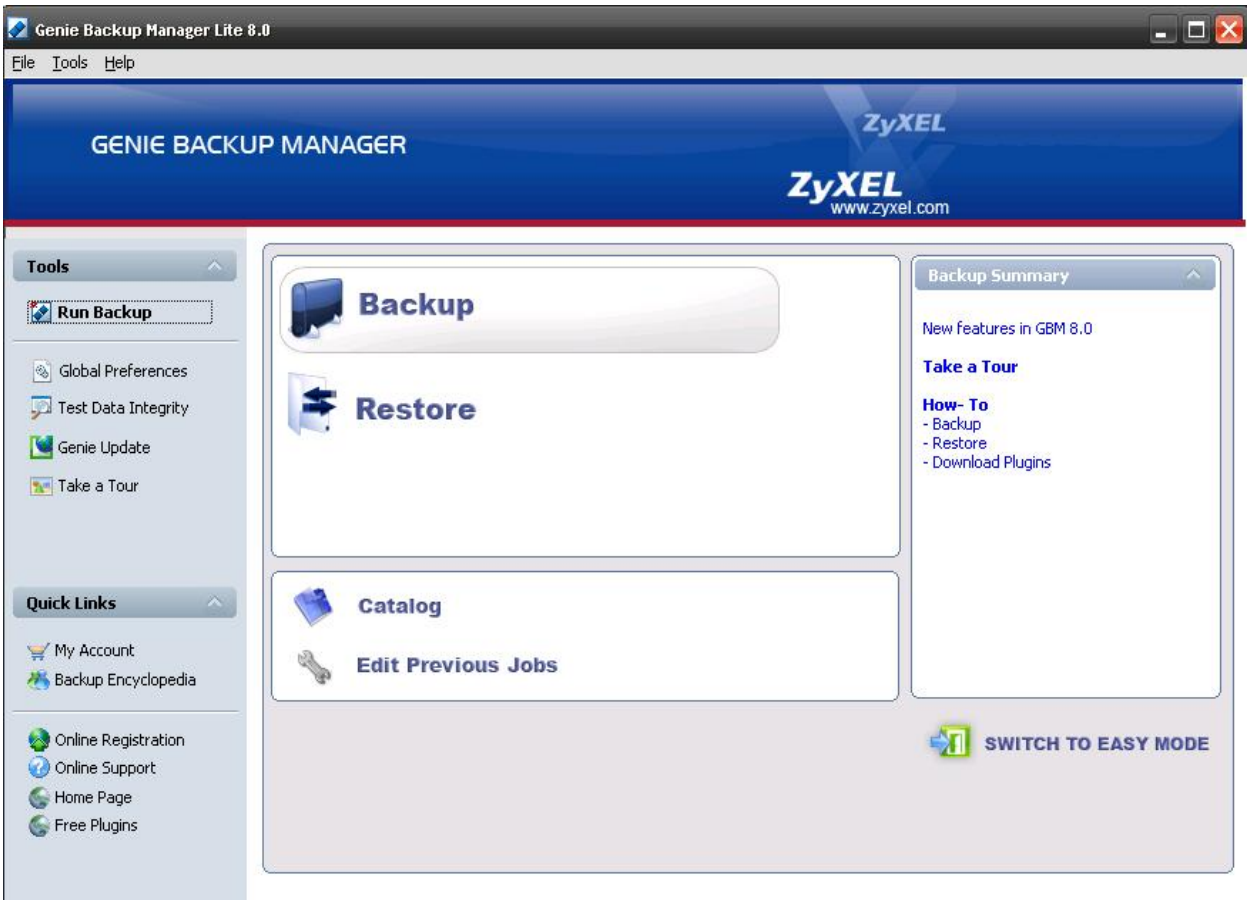


After the above procedures, one scheduled task is implemented.

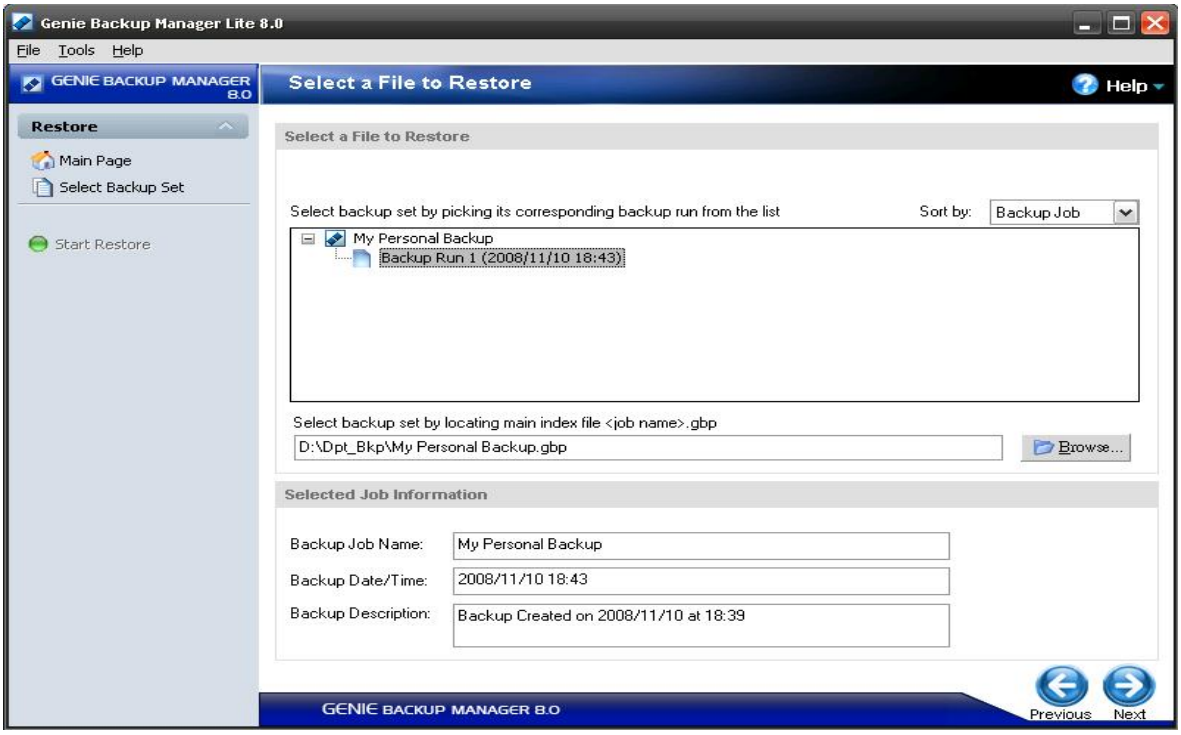


4.2.1.3 Restore lost data

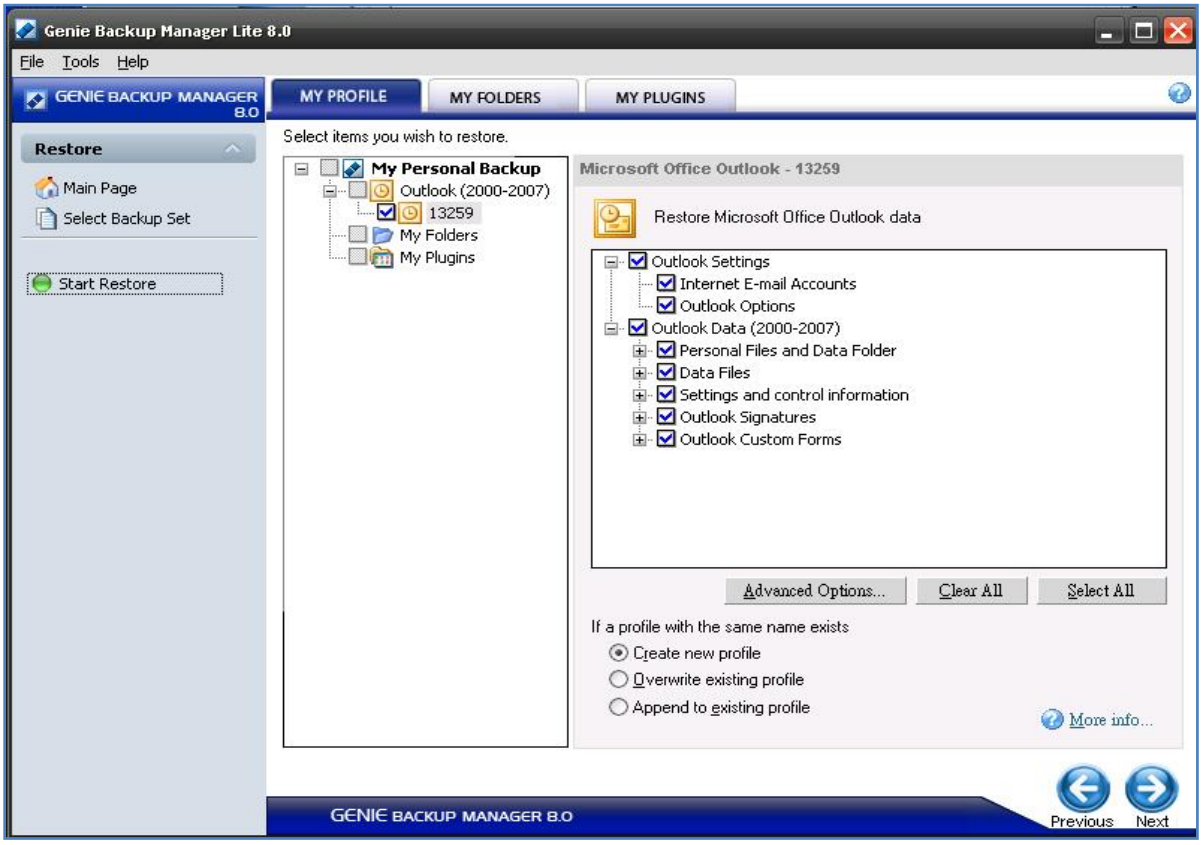
GBM Lite also provides friendly way to restore data from backup file(s). Users just need to click the store icon and then choose the specific file(s) and\ or folder(s) to be restored. Then, restore procedure will be finished quickly.



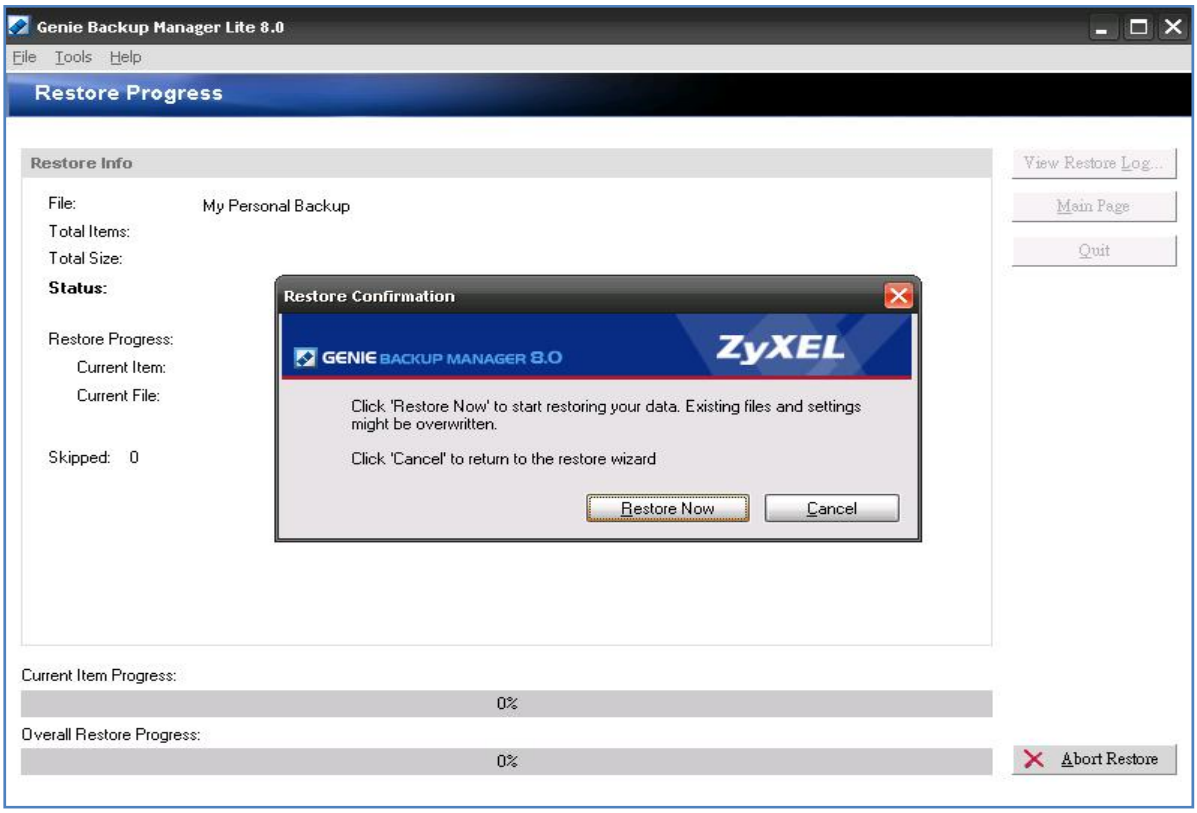
After deciding to restore your data, you need to choose which backup file will be your source to restore if you have two more backup files. IN this example, there is only one backup file.



Afterwards, users can select which file, folder or all the data to be restored.

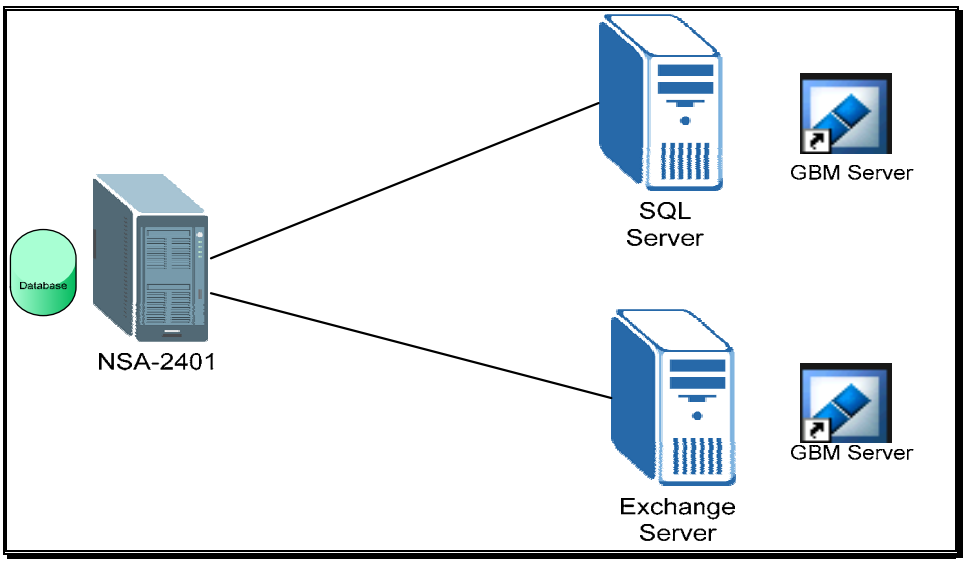


Finally, GBM Lite will run the restore procedure after you double confirm the restore action.



4.2.2 GBM Server software

The benefit of using GBM server is that users can backup their SQL server and Exchange server to NSA-2401. The backup procedure is similar with the GBM Lite. However, the GBM Server needs to be installed in the server which users want to run backup process. For examples, SQL server or Exchange server. Then, the GBM Server can run the regular backup task(s).



4.3 User-share Snapshot management

In NSA-2401, there are maximum five snapshots for each volume can be taken. However, the total amount of snapshot in system can be stored ten snapshots.

Additionally, NSA-2401 support separate access to share folders inside snapshot if system administrator activate the “User Share Permissions” by clicking “Snapshot Image Access” shown as the above figure.

If the “Snapshot Image Access” is set to “Allow Only Admin”, then normal users do not have privilege to the snapshot. Only admin has the right to access the snapshot.

If the “Snapshot Image Access” is set to “User Share Permissions”, then normal users have privilege to access the share folder inside the snapshot image.

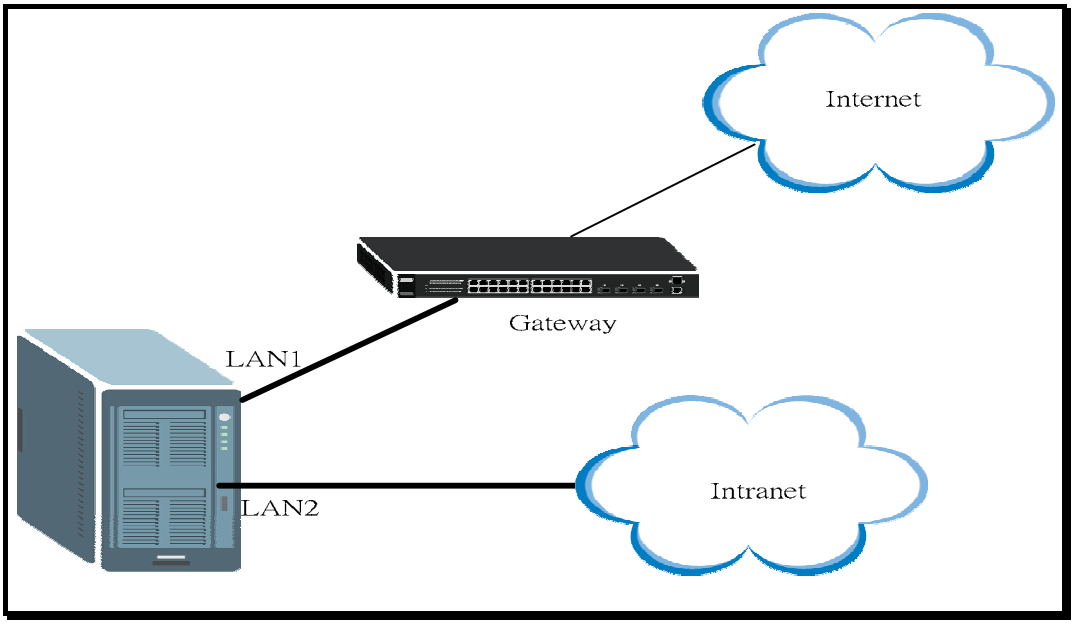
5. Networking

5.1 Dual Gigabit Ethernet Ports Support

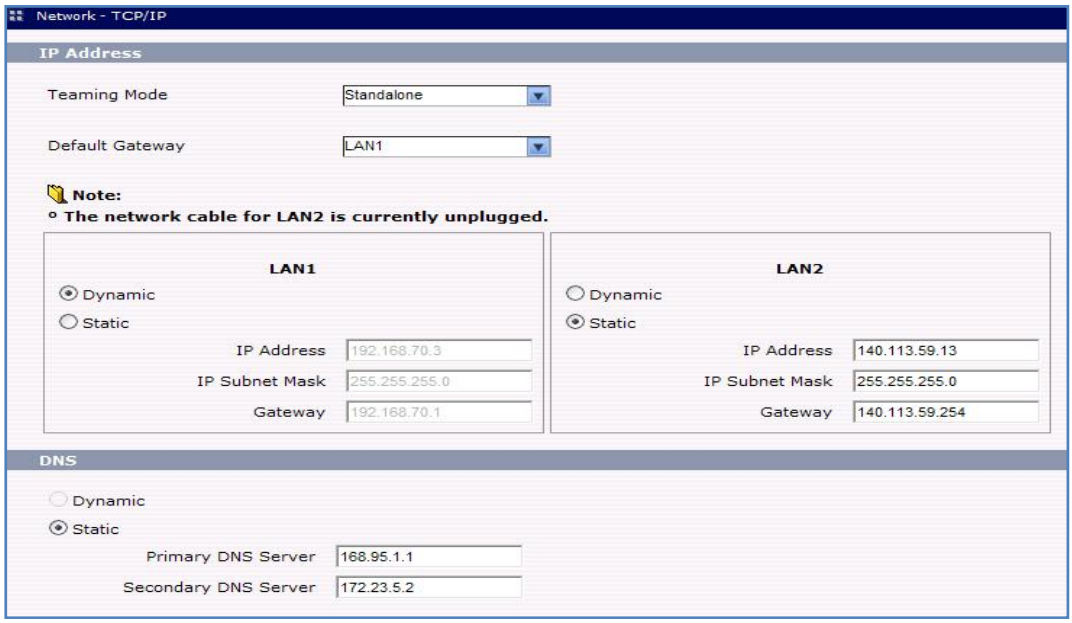
NSA-2401 provides dual Gigabit Ethernet (GbE) ports for deploying various scenarios. For examples, users can deploy the load balance to have better throughput while many clients are accessing NSA-2401 at the same time. Also, traffic of NSA-2401 can be forwarding to different Ethernet ports. NSA-2401 can have double bandwidth by applying the feature of “Link aggregation.”

5.1.1 Standalone Mode

In the scenario of "Stand Alone," LAN1 and LAN2 each use a unique IP address. These IP addresses are independent of each other. For example, one LAN port can be accessed from Internet users; the other can be used for Intranet users. System administrator does not need another switch to deploy if the company topology is simple enough.

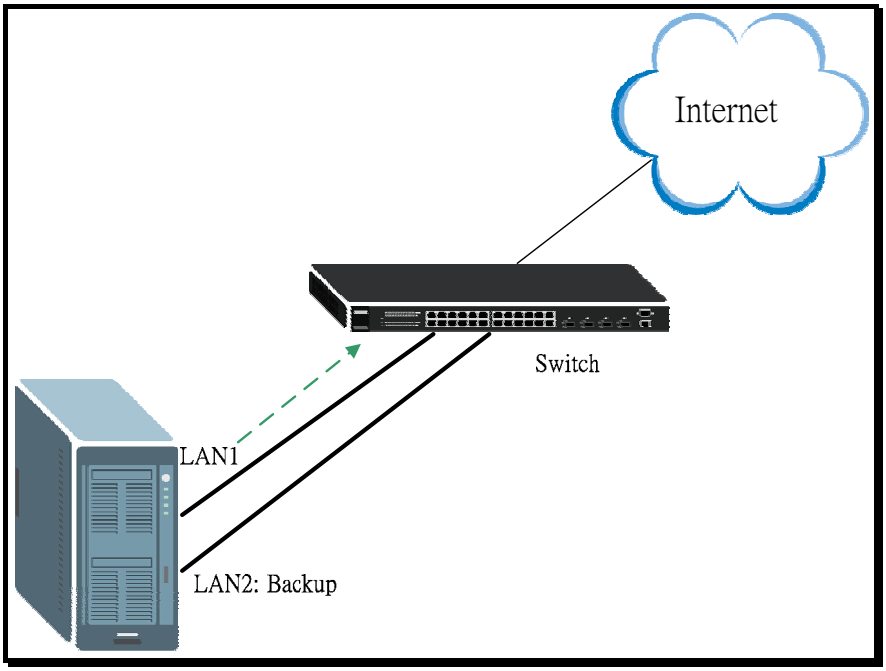


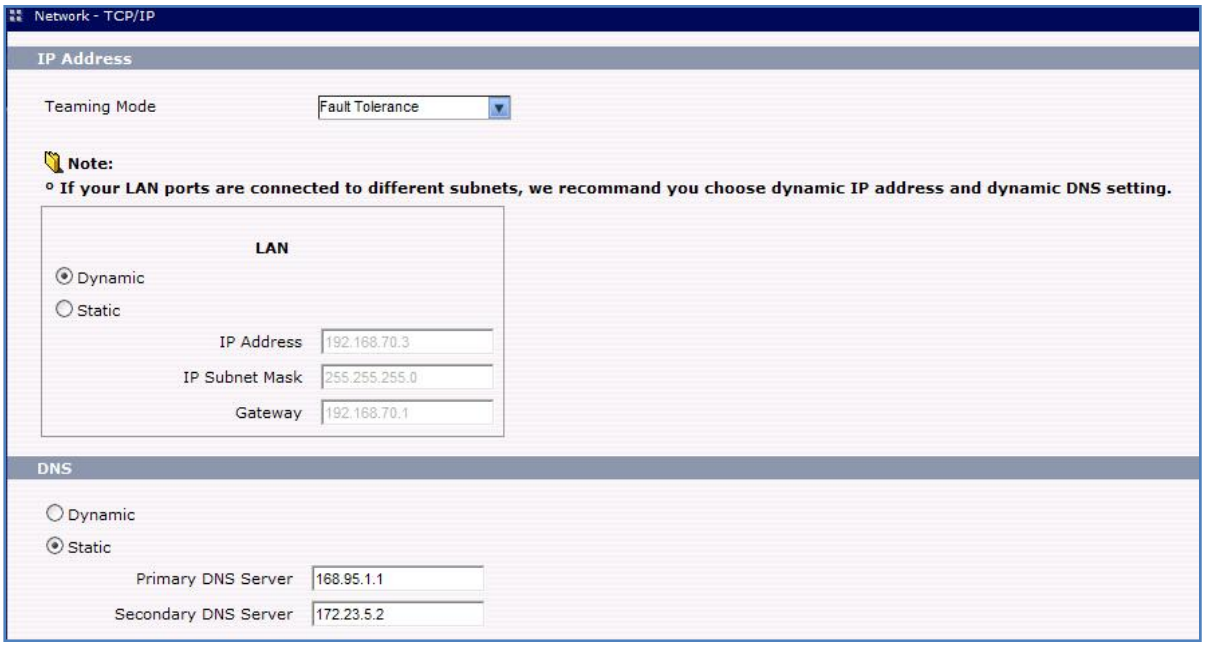
The configuration is similar the usual network setting, but one more LAN port. Users just need to decide which port will be default gateway and other IP assignments and DNS information for LAN ports.



5.1.2 Fault tolerance Mode

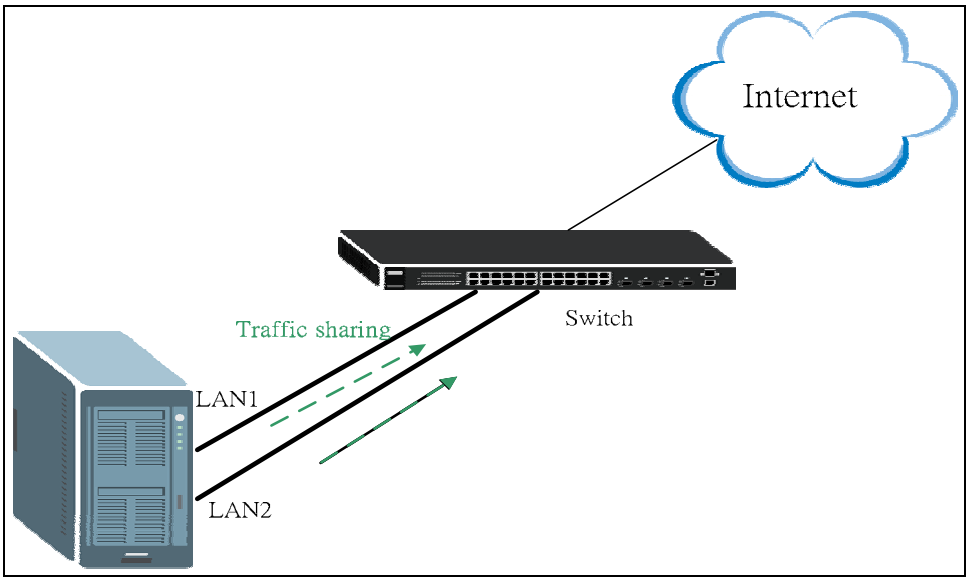
In the scenario of “Fault Tolerance,” LAN2 serves as a backup (fail-over) for the LAN1. Hence, both Gigabit Ethernet interfaces are connected to the same subnet. This application can prevent the single link failure and provide more reliable network environment.
In the configuration, there is only one IP address. If LAN1 loses its connection, LAN2 takes over LAN1's IP address and traffic.



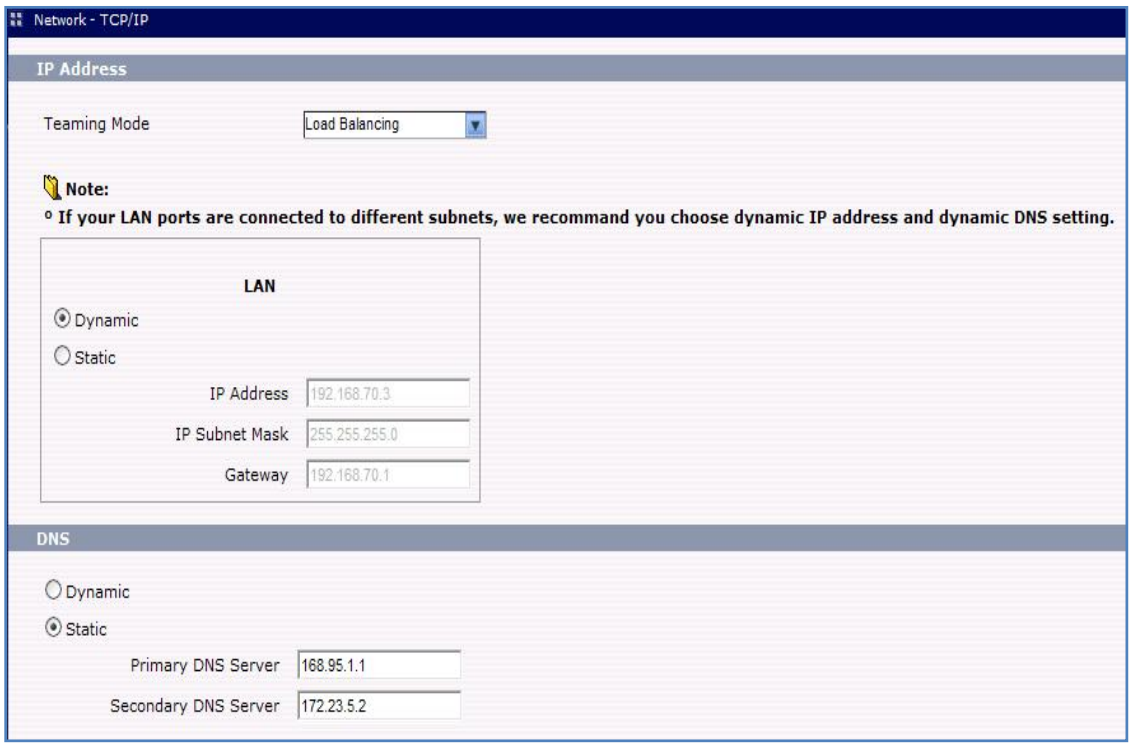


5.1.3 Load Balancing Mode

With the application of "Load Balancing," NSA-2401 will distribute the traffic load across LAN1 and LAN2. If the setting of LAN1 and LAN2 are on the same subnet with the same IP address, NSA-2401 also includes backup functionality (fault tolerance). Here, we suggest users to use DHCP if two LAN ports are located in different subnet.



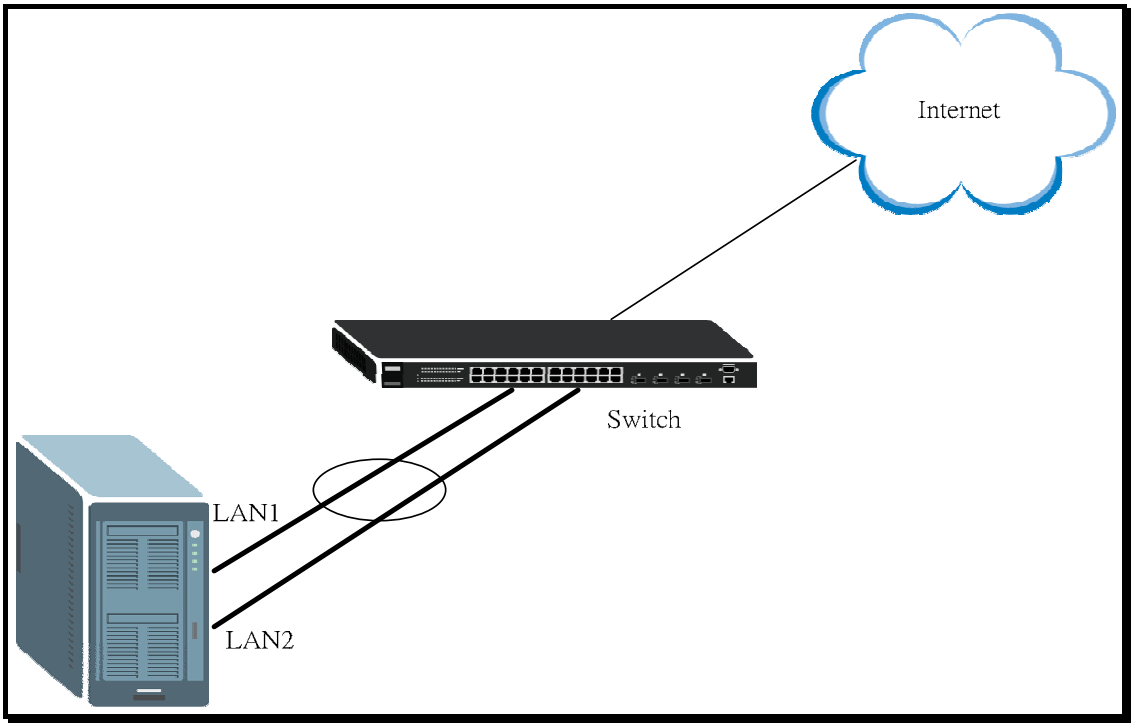
In the load balancing configuration, there is only one IP address for the LAN1 & LAN2 because those two ports are considered as one LAN port.

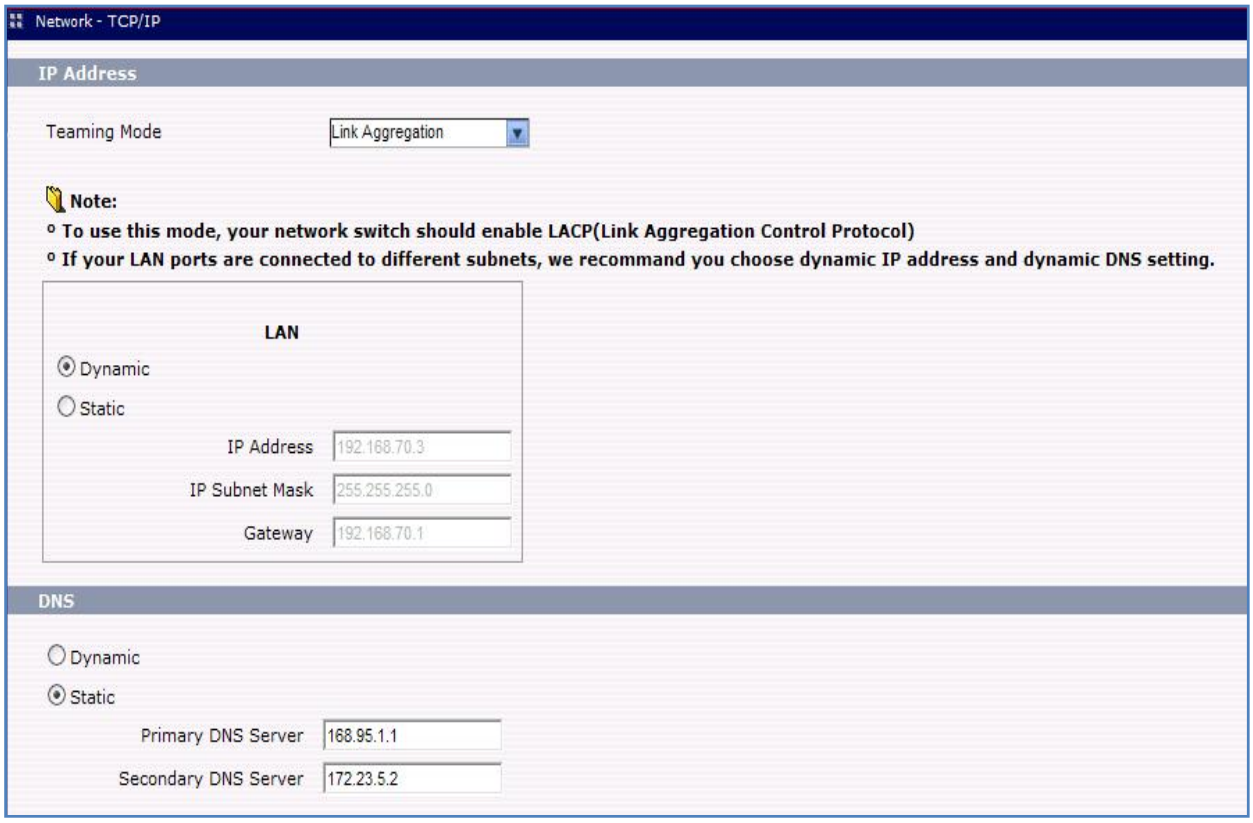


The algorithm of load balancing use hash function to allocate the traffic. Hence, the best scenario of deploying NSA-2401 with load balancing is inside the LAN. NSA-2401 will use source MAC address to distribute traffic. In other words, the traffic might be use specific port to forward the Internet traffic with the gateway topology since the incoming requests will be forwarded by gateway and gateway MAC will be used in the hash function of load balancing. Hence, we suggest load balancing of NSA-2401 is suitable to deployed in the intranet.

5.1.4 Link aggregation Mode

The feature of link aggregation is defined by IEEE 802.3ad. This feature is similar with the load balancing. But switch should be capable of performing IEEE 802.3 port link aggregation (also called trunking) enabled for the two interfaces and connects with NSA-2401. The main function of link aggregation combines two or more ports as a single logical link with greater bandwidth. In other words, NSA-2041 can theoretically provide twice bandwidth by activating the link aggregation. Accordingly, both interfaces use the same IP address and MAC address. It also includes fault tolerance and load balancing. Connect LAN1 and LAN2 to the same Ethernet switch.





6. Power management

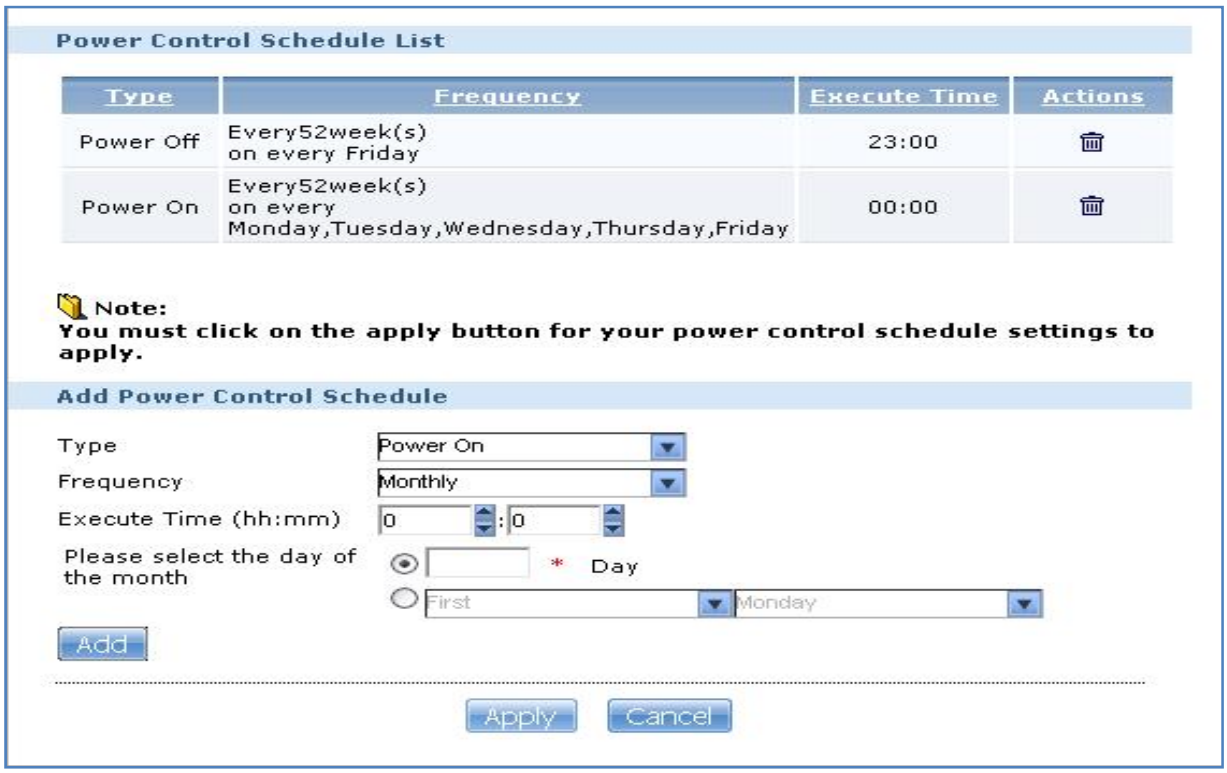
NSA-2401 provides users to do power management. To schedule the power on/off regularly, users can use this function to shut down and/or reboot their NSA-2401.

4.1 Power control schedule

First, enable the “Power Control Schedule” in Maintenance\Power Management

NSA-2401 provides three actions, “Power On, Power Off and Reboot”, to assign in schedule list.

In the following example, there are two schedules in the control schedule list. First rule is to set NSA-2401 regularly power off on 23:00 every Fridays for future 52 weeks. The second rule is to set NSA-2401 power on 00:00 every weekday.



Tips: NSA system will skip a schedule of "restart or power off" if the execution time comes while the NSA is doing the following actions:

- **Re-synchronizing a RAID**
- **Upgrading firmware**
- **Replacing the configuration file**

NSA system will suspend a schedule of "restart or power off" if the execution time comes wile the NSA is doing the following actions until they are finished.

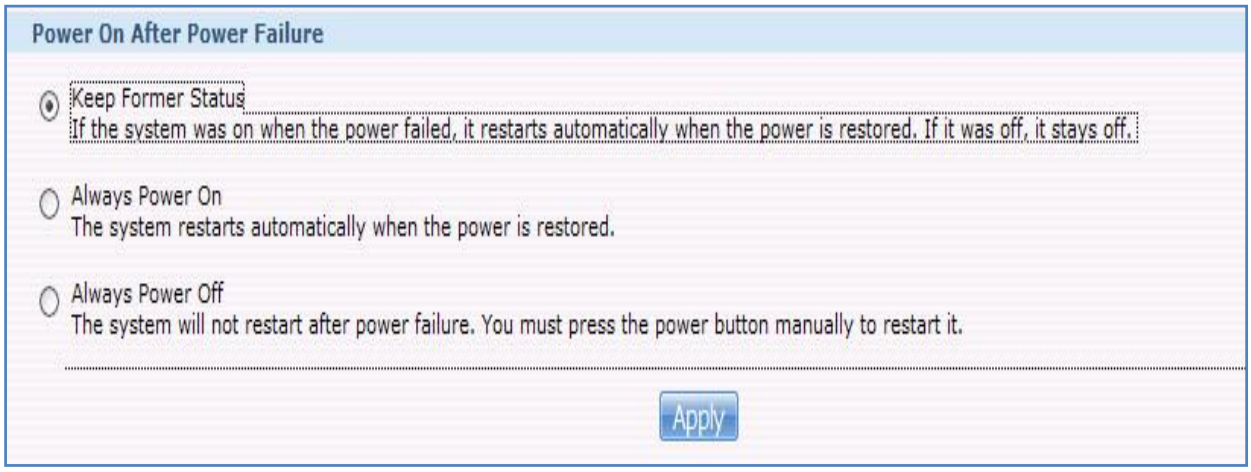
- **Backing up files**
- **Restoring files from a backup**
- **Taking a snapshot**

4.2 Power resume

NSA-2401 provides an intelligent hardware monitor for power status. Users do not worry about if NSA-2401 needs to be manually boot up after encountering power shortage or power failure.

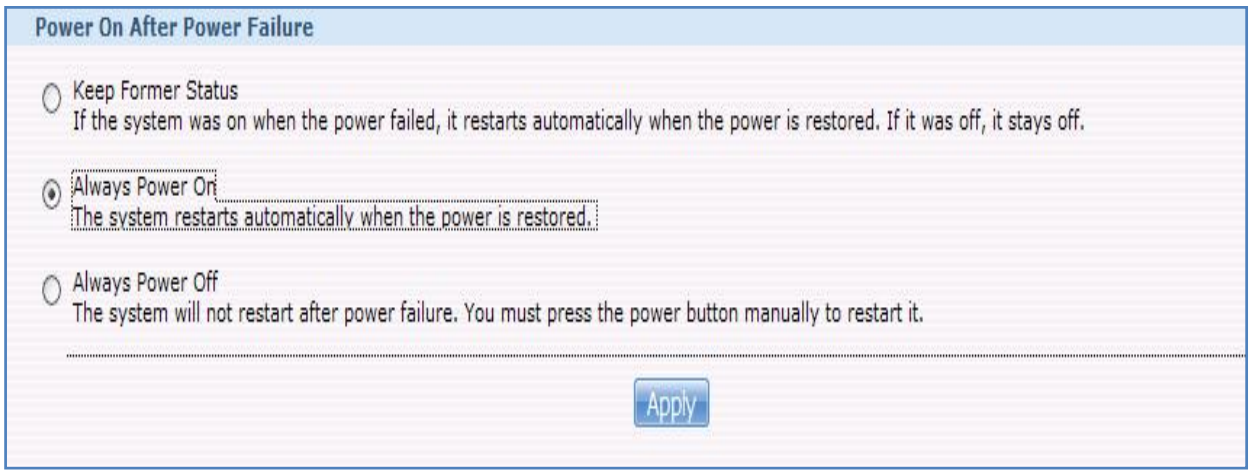
4.2.1 Keep Former Status

In this function, there are three options to be set in NSA-2401. The first one is 'Keep Former Status.' In other words, NSA-2401 will back to the status before power outage. For example, NSA-2401 will keep power off if it is power off before power shortage.



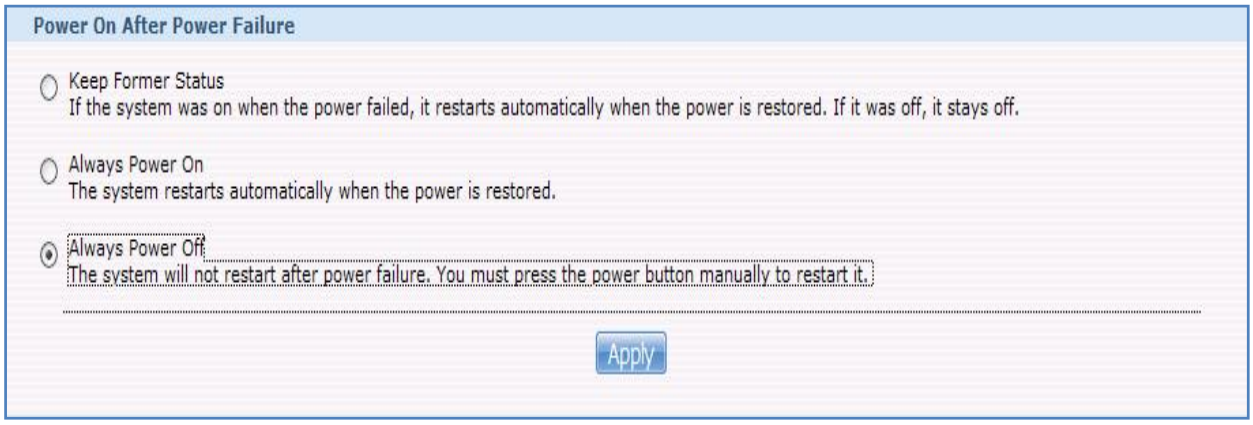
4.2.2 Always Power On

The second one is 'Always Power On' NSA-2401 will keep the status of «power on even it encounters power shortage. For example, NSA-2401 will automatically power on if any power outage happens. Users can apply this option to make sure the service(s) in NSA-2401 running.



4.2.3 Always Power Off

The final one is ‘Always Power Off.’ NSA-2401 will keep the status of ‘ power off’ even it encounters power shortage. For example, NSA-2401 will always keep power off if any power outage happens.



FAQ

1. **What is RAID?**

   RAID stands for **R**edundant **A**rray of **I**nexpensive **D**isks. It takes two or more hard disks to achieve greater levels of performance, reliability and/or larger volume of data size.

2. **Which kind of RAID is supported in NSA-2401\NSA-2400?**

   NSA-2401 support JBOD, RAID 0, RAID 1, RAID 5 and RAID 10.

3. **How many hard drive disk(s) do users need to implement RAID5 in NSA-2401?**

   To achieve RAID 5 in NSA-2401, the minimum HDD is three.

4. **Is the RAID function the software-based or hardware-based in NSA-2401?**

   The RAID function is software base in ZyXEL NSA-2401, .

5. **What is the file system supported in NSA-2401?**

   The internal file system used in NSA-2401 is XFS. Additionally, NSA-2401 also recognizes the file system in external HDD for EXT2, EXT3, NTFS, FAT16, FAT32 and XFS.

6. **What kind of operating system implemented in NSA-2401?**

   The operating system of NSA-2401 is Linux operating system, the kernel version is 2.6.

7. What is “Jambo frame?”

Originally, the MTU size in Ethernet is 1518 bytes. However, this will be time consuming while users need transfer large volume of data. Hence, the bigger size of frame exceeding 1518-byte per Ethernet packet is introduced. The Jambo frame size can be extended to 9000 byte but also depends on related network devices.

8. Does NSA-2401 support Jambo frame? What is the benefit for using Jambo frame?

Yes, NSA-2400\2401 support three kinds of Jambo frame, 4K, 8K and 9K. Once users activate Jambo frame setting in NSA-2401\NSA-2400, then the transfer rate between NSA and another device will be faster than using normal traffic size (1518-byte).

9. Does the size of a Jambo frame automatically negotiate with NSA-2401?

Since there is no mechanism in negotiating the size of a Jambo frame, NSA-2401\NSA-2400 cannot dynamically change the size of the Jambo frame once a user sets the size to be 4K, 8k or 9K. In other words, it is possible to lose data if the sizes of the jambo frame supported are not the same in clients and NSA-2400\NSA-2401.

10. How does the file transfer by USB port in NSA-2400\NSA-2401?

The file transfer is used at FTP mode once users attach their storage in USB port of NSA-2401\NSA-2400.

11. What is snapshot?

A snapshot represents a frozen image of a volume. The source of a snapshot is called an "original." When a snapshot is created, it looks exactly like the original at that point in time. As changes are made to the original, the snapshot remains the same and looks exactly like the original at the time the snapshot was created. Hence, the function of snapshot is very useful and important for data protection.

12. Does snapshot be taken in external volume?

No, the snapshot in NSA-2401 can be only taken in internal volumes and not be taken in external hard disk drive.

13. Will snapshot be stored in the storage space of internal volume of NSA-2401?

No, the NSA-2401 stores snapshots in the space on the disk array that is not used by volumes. In other words, snapshot will be stored in different storage space that is not used by internal volumes.

14. Can users increasingly adjust snapshot space?

No, once users create first internal volume, the space available for snapshots can be decreased later by increasing the size of volumes, but not increased. In other words, volumes can only be made bigger, not smaller. Hence, the storage size of snapshot will be smaller if the volumes modifier bigger. So, it's better to leave enough unused space on a disk array when creating volumes.

15. Does snapshot be stored in a locked volume?

No, the NSA does not take snapshots of a locked volume.

16. Is there any way to recover the snapshot if the damaged disk array contains the snapshot(s)?

No, the snapshots are lost and cannot be recovered if the disk array containing the snapshots fails.

17. What is the button marked as “COPY” in the front panel of NSA-2401?

The copy button is a handy hardware button on the front panel of the NSA-2401. Users can use it to copy files between a USB flash drive or externally connected hard disk and a share in the NSA. If more than one USB device is connected to the NSA, the NSA uses the USB device that was most recently connected. In other words, users can ” Copy button” to copy “from USB drive to NSA” or “from NSA to USB drive.” By pressing Copy button shortly (without hearing any beep), it will copy data from public directory by default. There is a LED to cooperate with Copy Button. When there is a external storage, this LED will show green. When system is copying data from USB storage to internal storage, it will be blinking green. When the copy is complete, it will be back to green. It there is something wrong, it will show red, User can use Web GUI to setup the setting of Copy/sync feature.

18. How does it work after pressing copy button in the front panel of NSA-2401?

When pressing the “copy” button, it will initiate the process copying from the one USB device which is last recognized by NSA-2401. In other words, users might link two USB storages in both of USB ports of NSA-2401 at the same time. At this moment, if users press button "COPY", NSA-2401 does not copy files into NSA-2401 from both of USB devices together, but only from the USB storage which is the last one recognized by NSA-2401.

19. What is the difference between "Scan" and "Repair" on NSA-2401?

"Scan" is a defragment tool on NSA-2401, it is similar to the defragmentation tool on Windows PC. If you have the NSA automatically attempt to repair any damaged files it finds during the scan, be careful not to cancel the scan as you may lose data.

"Repair" is used to resynchronize a RAID. For example, when the status of a volume shows "Degraded", we have to replace the problem disk, and click "Repair" to resynchronize the RAID. If the disk inserted is a new one with no data on it, the repair process will automatically start.

20. I do not want the Hard Disk idle time shutdown feature, how can I disable it?

By default, NSA-2401 will shutdown its hard disks after 3 minutes of idle time. Users can change this feature by settings. The value can be set from 0 to 300. When users set the idle time as 0, it means that hard disk will never be idle even there is no activity in hard disk for a long time.

21. Which kind of the media server does NSA-2401 apply?

There is no media server built in NSA-2401 since NSA-2401 is designed for business storage application.

22. What is the maximum number of concurrent sessions that NSA-2401 supports?

The NSA-2401 can support a maximum 64 concurrent sessions. And the session limit may vary depending on the user-share resource usage.

23. What is the maximum size of hard drive disk can be recognize by NSA-2401?

In our lab test, NSA-2401 do support 1.5TB hard drive disk and total storage capacity can be up to 6TB.

24. How to use the reset button in NSA-2401?

NSA-2401 Reset button function:
1. One beep (press 2 seconds): Reset admin password & ip setting
2. Three beep (press 10 seconds): Reset to factory setting and reboot

25. Does NSA-2400 support NFS protocol?

NSA-2401 does support NFS network protocol.

26. What authentication servers does NSA-2401 support?

NSA-2400 current supports following OS:
(1) Microsoft Active Directory Authentication (ADS)
(2) Microsoft NT Domain Controller (PDC) (PDC)

27. Which operating system will be supported by Genie Backup Manager Lite?

At this moment, Windows Vista, Windows XP, Windows 2000 Windows 98/SE.

28. Which operating system will be supported by Genie Backup Manager Server?

At this moment, GBM Server supports Windows 2000/2003 server and 2008 server.

29. How many maximum snapshots can be stored in NSA-2401?

With firmware version 1.00 in NSA-2401, users can store at most ten snapshots in their NSA-2401 system.

30. How does NSA-2400 select snapshots when the maximum number of images is reached in the setting of NSA-2401?

With firmware version 1.00, NSA-2401 can store maximum ten snapshots. NSA-2401 system will automatically delete the specific image(s) that user's setting, ex: the date, the size. In other words, if NSA-2401 keeps more than five snapshot images, the

system will delete the oldest or the bigger snapshot images when you restart the job. This is assuming that you set the maximum number of snapshots to ten.

31. How to download diagnose information?

It would be better to quickly resolve your difficulty in your system if you could provide your detail system diagnose information to ZyXEL. There is one system diagnose file recorded in NSA-2401. Administrator can retrieve this information by the following steps:

1. Open the web browser on your computer.
2. Type “http://NSA-2401 IP address.” For example, ”http://192.168.1.3 ”.
3. In the login window of NSA-2400, please enter the default username ”admin” and password “1234”.
4. After logging successfully,
type ”http://IP/cgi-bin/remote_help-cgi?type=diaginfo”. For
Example, ”https://192.168.1.3/cgi-bin/remote_help-cgi?type=diaginfo”.
5. Downloading the file, ”*.tgz “ , to your computer.
For example, download the file named as ” diaginfo_20081112_XXXXXX.tgz” to your local computer.
6. Please attach this diagnose information to ZyXEL technology support whenever you need support from ZyXEL.

32. How many volume encrypted information can be stored in USB keys once users create encrypted internal volume in NSA-2401?

One USB key is dedicated for ONLY one internal volume. Hence, there will be three USB keys to be created if users create three encrypted internal volumes.